Instruments

THE MAGAZINE OF

Measurement and Control

Vol. 15
JAN.
1942
No. 1

SPECIAL ISSUE :: IN TWO PARTS :: PART TWO

PART TWO

THE 1942 Instruments INDEX

These Testing and Measuring Instruments are accurate, versatile, easy to operate

NEW FREQUENCY STANDARDS ASSEMBLY

DEVELOPED BY BELL TELEPHONE LABORATORIES

MADE BY WESTERN ELECTRIC

This new instrument measures frequencies rapidly and with extreme precision. It has all the advantages of the larger, heavier, more costly assemblies, plus features found in no other instrument. Rightness of the design has been demonstrated through several years use by Western Electric in the manufacture of radio and allied equipment.

FREQUENCY STANDARD AND HARMONIC GENERATOR (lower panel): Generates stable and accurate signals, either harmonically rich or sinusoidal. With an oscillator assembly providing a 100 kc frequency, the output gives fundamental frequencies of 100, 50, 20 and 10 kc. Harmonic output may be used to the 1000th harmonic. Accuracy is better than *1 part per million* over long periods without the use of any temperature controls.

REFERENCE FREQUENCY AND HETERODYNE UNIT (center panel): Provides a crystal controlled oscillator circuit, plus modulator and amplifiers. Eight crystals can be plugged into the instrument, providing fundamental frequencies from 2 to 10 megacycles.

FREQUENCY INDICATOR UNIT (upper panel): Gives a direct reading of the frequency of the input signal from 0 to 100,000 c.p.s. Frequency is read on a large illuminated scale having five ranges.

Seven features you'll like:

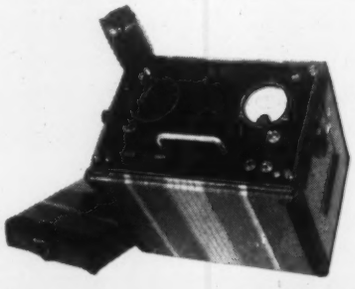
- High stability without temperature control
- High frequency operating range
- Either harmonic or sine wave output
- Multi-vibrator gives four fundamental output frequencies
- Built-in audio frequency modulator
- Small size—28" x 21" x 15"
- Portable—weighs only 150 pounds

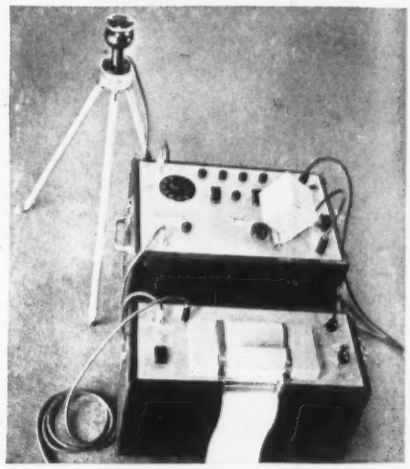
SOUND AND VIBRATION MEASURING INSTRUMENTS

RA-330 and RA-331 Sound Level Meters

If your work entails measurement of overall sound levels here is the instrument you need. RA-330 is powered from self-contained batteries—may be used anywhere. RA-331 operates on alternating current. Either model weighs but 22 pounds, measures 12" x 8" x 11" and meets all requirements of the American Standards Association.

These instruments have built-in calibration to keep them accurate at all times. Stabilized feedback is employed in the amplifier for greater accuracy. The meter is simple and fool-proof. With a little training, anyone can operate it. The microphone is a Western Electric 633A non-directional moving coil type, used widely in radio broadcasting. With all these features, the cost is unusually low. Write for bulletin SP-155 for further information.





RA-281 Recording Sound Frequency Analyzer

Here is the only instrument designed to give an accurate analysis and permanent record of sound and vibration frequencies. It divides any sound or vibration within its range into frequency components and simultaneously records the intensity of each frequency on a special paper chart.

In the analyzer, a drive motor sweeps the dial through the frequency range of 10 to 9500 c.p.s. as a narrow band quartz crystal filter selects only the frequency through which the dial is passing. The linear decibel chart is drawn in the recorder by an accurate stylus, clutch and drive system of special design.

A Western Electric 630A dynamic microphone (or a vibration pick-up), a synchronous sweep drive motor of appropriate speed and a carrying case for auxiliaries complete the equipment. Write for bulletin SP-156 for complete description and specifications.

Electrical Research Products Division
OF
Western Electric Company
INCORPORATED
76 VARICK STREET, NEW YORK, N. Y.

SPECIAL ISSUE OF *Instruments* THE MAGAZINE OF MEASUREMENT and CONTROL

Vol. 15, No. 1
January, 1942
Price $2.00
In Two Parts

PART TWO—THE 1942 INSTRUMENTS INDEX

More Than a Directory

CONTAINING the answers to 99% of the inquiries which *Instruments* receives from subscribers, this Supplement places at your instant command a wealth of information.

The Index Section—"Who makes what"—is the most important. Anyone who wants to know where he can buy or secure information on a certain product will find the product properly indexed and cross-indexed, and under it the names of the manufacturers of this equipment and manufacturers' sole representatives.

Indexing System. Products are indexed under the main word. In cases where a name is ambiguous, or where the item is known under two or more names, companies making such devices are listed under one heading and cross-references inserted under the other headings.

Specific Terms. You never are in need of "a gage" but of some particular kind of gage. Therefore we do not list manufacturers under broad general designations. For example, we do not list any names under the main heading "Meters" but we give the sources of supply for numerous classes and types of meters. Moreover, we do not list any names under "Meters, Liquid" alone, but we give under proper subheads the sources of supply for the *class* and *type* of liquid meter you may need.

Correctness of Headings. As explained above, main headings and subheads are technically correct. A few are not scientifically correct: they are names in common usage, recognized for the convenience of the majority.

Correctness of Listings. We have endeavored to list no firm names under specific headings unless the instruments made by such firms belong there by virtue of their design and construction.

For example, instruments called "colorimeters" but which cannot yield color specifications, belong under Color Comparators, Color Matchers, etc.

Also, an instrument called the "Integrating ————" or "Totalizing ————" may be nothing but a counting type, belonging under the subhead "Counting."

This we have done in relatively few cases, for it amounts to *censoring* the data sent to us. As a rule, we had to take the company's word that it could supply the product in question.

Completeness. More than 1200 manufacturers were canvassed in the last four months. Those that did not answer our first letter after one month received a second one. Again, a third letter was sent to nonresponders at the end of the second month. In the last few weeks we even sent representatives to call on manufacturers. Therefore, the omission of any manufacturer's name under any heading is due to the negligence of someone in his own organization.

CONTENTS

1. *Index to Instruments and Apparatus.* **In this section, products are listed alphabetically. Under each heading appear the names of the manufacturers of this equipment (and of the sole representatives of such manufacturers).** *Pages 6-76.*

2. *List of the Laboratory Supply Houses.* **Under the heading "Apparatus, Laboratory," on page 8, are listed companies specializing in laboratory supplies, equipment, instruments and apparatus.**

3. *Directory of Manufacturers and sole representatives,* **with complete addresses and brief descriptions.** *Pages 82-91.*

4. *Books of Interest to Instrument Men,* **will be a new annual feature.** *Pages 77-81.*

5. *Manufacturers' Literature.* **New literature pertaining to Instrumentation.** *Pages 95-98.*

6. *Index to Advertisers in this Section. Page 92.*

7. *Annual Index to Articles and Authors in Instruments, Volume 14, 1942. Pages 93-94.*

Every effort has been made to restrict the names in the Index Section to (1) the actual manufacturers and (2) the sole authorized sales agencies. On the other hand, whenever you desire to order at one time a variety of equipment, made by different firms, you may find it most convenient to get in touch with a recognized, competent, "laboratory supply house." These houses are listed under "*Apparatus, Laboratory,*" on page 8.

Instruments' Further Service. This Index contains the answers to *only* 99% of your inquiries. If you cannot find the product or the name you want, communicate with the Information Section, Instruments Publishing Co., 1117 Wolfendale St., Pittsburgh, and every effort will be made to furnish the information promptly.

Suggestions. We shall appreciate suggestions regarding:

1. Headings not at present found in this Index which should be there,
2. Firms listed erroneously, and
3. Other inaccuracies which may have crept in despite all precautions.

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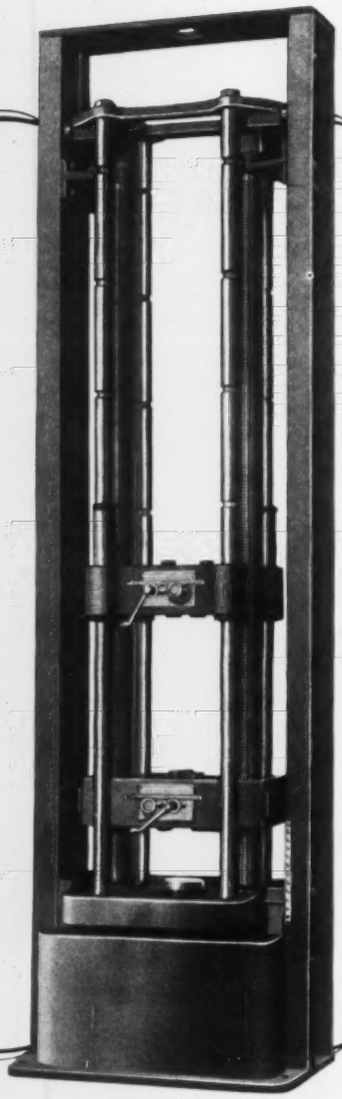

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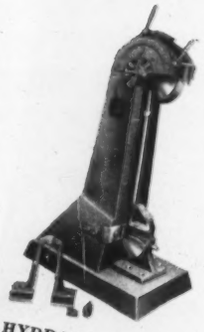

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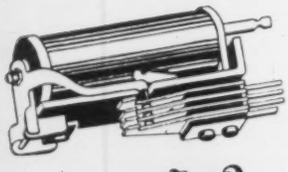

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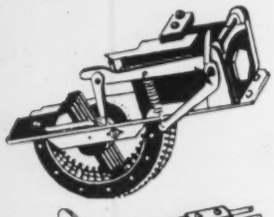

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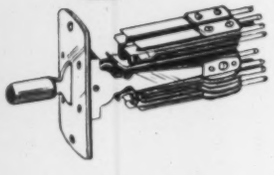

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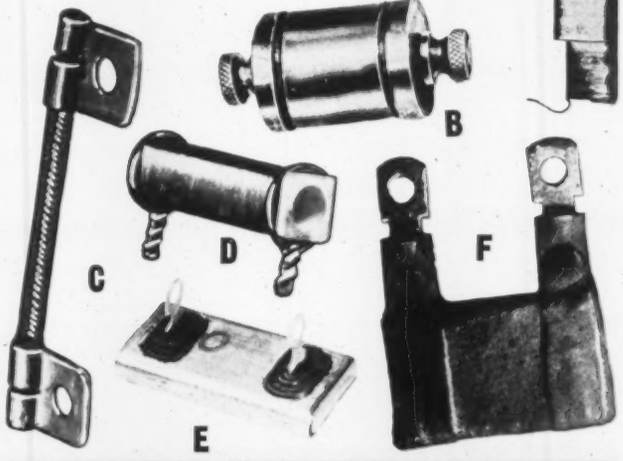

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Reliance Instrument Co.
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AMMETERS, Indicating
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Electric Auto-Lite
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AMMETERS, Recording
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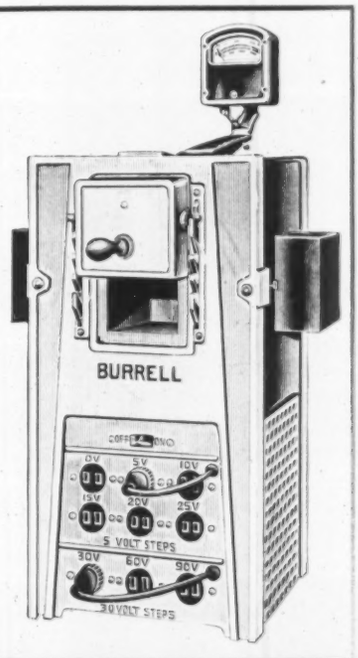

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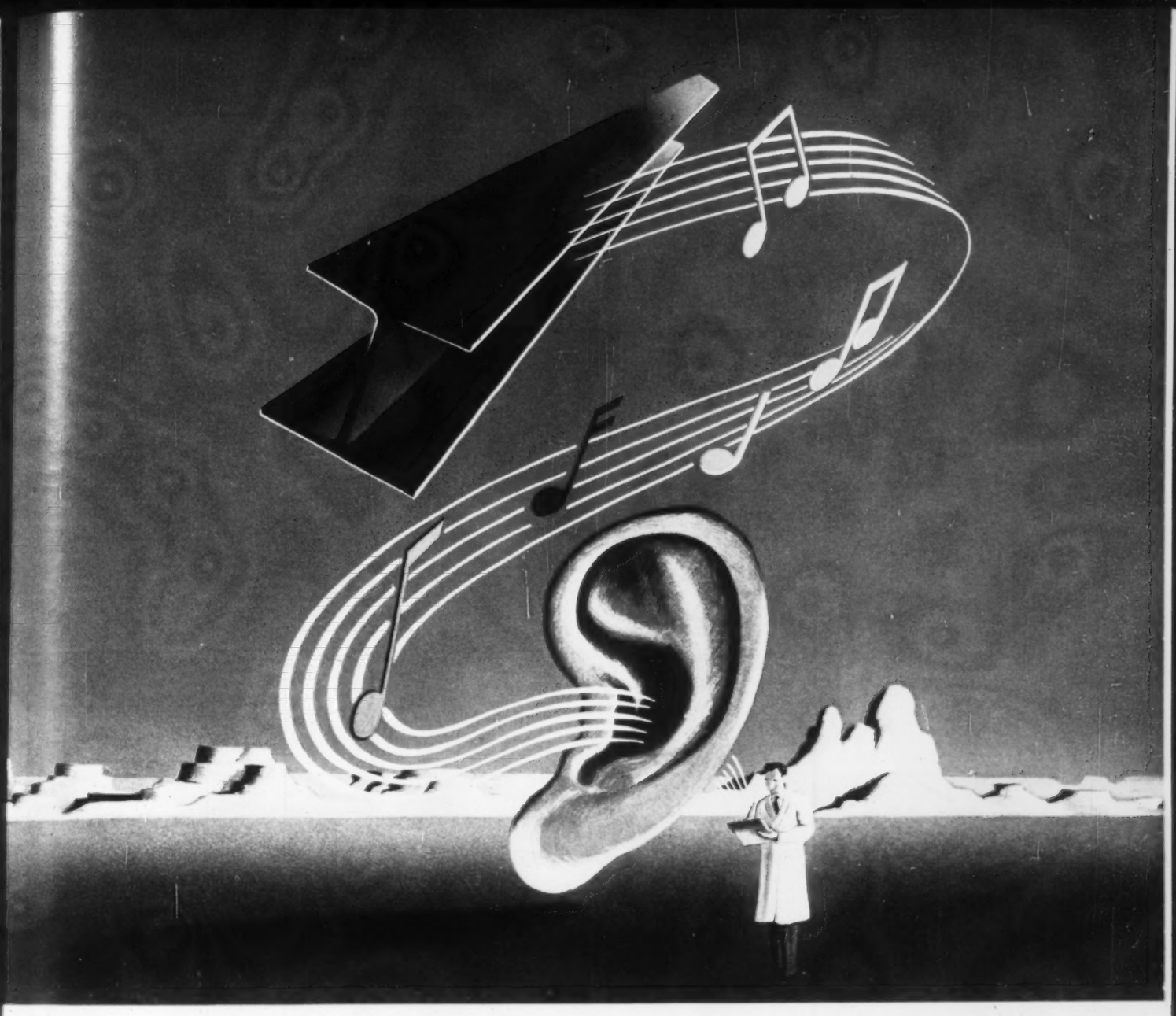

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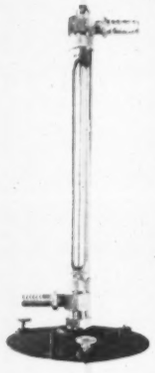

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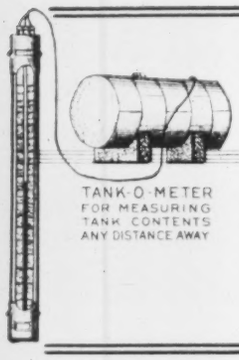

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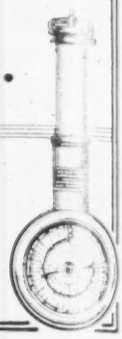

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Westinghouse Elec. & Mfg.

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Moeller Instrument Co.
Precision Therm. & Inst.
Ruehfel Co.
Schultheis Corp.
Tagliabue Mfg. Co.
Taylor Inst. Cos.

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(See Barometers, Recording)

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Am. Paulin System
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Fuess, Inc.
Green, Henry J.
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Keuffel & Esser Co.
Kollsman Inst. Co.
Mine Safety App. Co.
Pioneer Inst. Co.
Precision Thermometer
Taylor Inst. Cos.
Warren-Knight

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Fee & Stemwedel
Friez & Sons
Fuess, Inc.
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BAROMETERS, Aneroid (Cont'd)
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Keuffel & Esser Co.
Kollsman Inst. Co.
Pioneer Instrument Co.
Scientific Inst. Co.
Taylor Inst. Cos.
Testrite Instrument Co.
Warren-Knight Co.

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Chicago Apparatus Co.
Defender Automatic Reg.
Eimer & Amend
Fisher Scientific Co.
Friez & Sons
Fuess, Inc.
Gaertner Scientific
Green, Henry J.
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Taylor Inst. Cos.
Uehling Instrument Co.
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Brown Inst. Co.
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Kenyon Instrument Co.
Keuffel & Esser Co.
Taylor Inst. Cos.
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Fee & Stemwedel
Foxboro Co.
Friez & Sons
Fuess, Inc.
Kenyon Instrument Co.
Keuffel & Esser Co.
Kollsman Inst. Co.
Manning, Maxwell & Moore
Pioneer Instrument Co.
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Tagliabue Mfg. Co.
Taylor Inst. Cos.
Uehling Instrument Co.
Warren-Knight Co.

BAROMETRIC PRESSURE RECORDERS (See Barometers, Recording)

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BATTERY CHARGERS
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Cutler-Hammer, Inc.
Electrical Facilities, Inc.
Ferranti Electric, Inc.
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Mallory & Co.
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BEAM COMPASSES (See Drawing Instruments)

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BEATING TESTERS (See Testers, Beating)

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Baird Associates
Bausch & Lomb
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Sangamo Electric Co.
Sickles Co.
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Coleman Electric Co.
Fisher Scientific Co.
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Leeds & Northrup Co.
Sargent & Co.
Scientific Glass App. Co.

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Central Scientific Co.
Gow-Mac Instrument Co.
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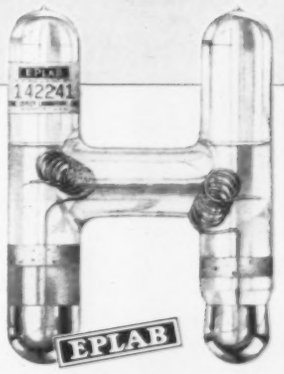

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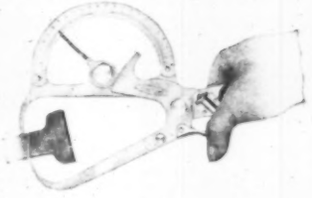

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Thwing-Albert
Weston Elec. Inst. Corp.

CEMENT APPARATUS (See Testers & Testing Machines, Cement)

CEMENTING GAGES (See Gages, Cementing)

CEMENT MOLDS
Central Scientific Co.
Fisher Scientific Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Standard Concrete App.

CEMENT NEEDLE APPARATUS
Fisher Scientific Co.
Humboldt Mfg. Co.

CENTRIFUGES
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Fisher Scientific Co.
Sargent & Co.
Williams Apparatus Co.

CENTRIFUGES, Paper Testing
Williams Apparatus Co.

CENTRIFUGES, Oil Testing
Boekel & Co.
Braun Corp.
Central Scientific Co.
Eclipse Aviation
International Equip.
Moeller Inst. Co.
Precision Scientific Co.
Tagliabue Mfg. Co.
Thomas Co., Arthur H.
Western Machinery Co.
Westinghouse Elec. & Mfg.

CHAINS, SURVEYOR'S (See Surveying Instruments)

CHECKERS, RADIO TUBE (See Analyzers, Radio Set)

CHEMICAL FEEDERS, Automatic pH Control
Electronic Prod. Co.
Everson Mfg. Co.
International Filter Co.
Leeds & Northrup Co.
Tagliabue Mfg. Co.
Wallace & Tiernan

CHEMICAL FEEDERS, Dry & Liquid
Builders-Providence
Cochrane Corp.
Colloid Equip. Co.
Fischer & Porter
Gump Co., B. F.
International Filter Co.
Jeffrey Mfg. Co.
Omega Machine Co.
Richardson Scale Co.
Wallace & Tiernan Prod.

CHEMICAL PORCELAIN (See Porcelain, Laboratory)

CHLORINE CONTROL APPARATUS (See Controllers, Automatic, Chlorine)

CHLORINE TESTING APPARATUS (See Testers, Chlorine)

CHOKES
Amplifier Co.
Andrew, Victor J.
Annis Co.
Clough-Brengle Co.
Martin Decker Corp.
Mallory & Co.
Ohmite Mfg. Co.
Raytheon Mfg. Co.
Sickles Co.
Thordarson Elec. Co.
United Tran-former Corp.

CHOKES, Precision metering, for flowtests on oilwells
Ruska & Co., Inc.

CHRONOSCOPE
Rawson Elec. Inst.

CHRONOGRAPHS
American Inst. Co.
Aristo Import Co.
Burke, Louis
Cambridge Inst. Co.
Ducommun Co.
Electro-Medical Lab.
Esterline-Angus Co.
Fecker, J. W.
Gaertner Scientific Corp.
Jaeger Watch Co.
Jardur Import Co.
Pierce Watch Co.
Precision Thermometer
Waugh Laboratories

CHRONOMETERS (See Watches)

CIRCUIT BREAKER ANALYZERS
Cincinnati Clock & Inst.

CLASSIFIERS, Particle Size, Air
Colloid Equip. Co.
Federal Pneumatic Sys.

CLINOGRAPHS, Bore Hole
Geophysical Inst. Co.
Sperry-Sun Well Survey'g

CLINOMETERS, Ship
Kuner Co. Max
Moeller Inst. Co.

CLOCKS, Master
Cincinnati Time Rec. Co.
Gaertner Scientific Corp.
General Elec. Co.
Howard Clock Products
International Bus. Mach.
National Time & Signal
Paragon Electric Co.
Standard Elec. Time
Stromberg Electric Co.
Thomas Clock Co.
Warren Telechron Co.
Zenith Electric Co.

CLOCKS, Minute Impulse & Synchronous
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Cramer & Co., Inc.
Elec. Tachometer Corp.
General Elec. Co.
Howard Clock Products
International Bus. Mach.
National Time & Signal
Paragon Electric Co.
Standard Elec. Time Co.
Stromberg Electric Co.
Thomas Clock Co.
Warren Telechron Co.
Zenith Electric Co.

CLOCKS, Primary
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Cincinnati Time Rec. Co.
General Elec. Co.
Howard Clock Products
International Bus. Mach.
National Time & Signal
Stromberg Electric Co.
Thomas Clock Co.

CLOCKS, Secondary
American Automatic Elec.
Cincinnati Time Rec. Co.
General Elec. Co.
Howard Clock Products
International Bus. Mach.
National Time & Signal
Standard Elec. Time
Stromberg Electric Co.
Thomas Clock Co.

CLOCKS, Standard
Gaertner Scientific Corp.
Jaeger Watch Co.
Kollsman Inst. Co.
Standard Elec. Time

CLOCKS, Stop
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Fish-Schurman Co.
Glogau & Co.
Jaeger Watch Co.
Paragon Electric Co.
Standard Elec. Time
Tagliabue Mfg. Co.
Thompson Clock Co.

CLOUD & POUR TEST APPARATUS
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American Inst. Co.
Central Scientific Co.
Corning Glass Works
Fisher Scientific Co.
Humboldt Mfg. Co.
Moeller Inst. Co.
Ruenfel Co.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Western Machinery Co.

COAL METERS
Bailey Meter Co.

COIL TESTING EQUIPMENTS (See Testers, Coil)

COLLIMATORS, Vertical
Fecker, J. W.
Pioneer Instrument Co.
White Co. Inc.

COLOR ANALYZERS, Photoelectric
Akatos, Inc.
Bausch & Lomb Optical
Central Scientific Co.
Eimer & Amend
Electric Sorting Mach.
Electronic Laboratory
Electronic Prod. Co.
Ess Inst. Co.
Fisher Scientific Co.
Gaertner Scientific Corp.
General Elec. Co.
General Radio Co.
Jarrell-Ash Co.
Klett Mfg. Co.
Pfaltz & Bauer, Inc.
Photobell Corp.
Pho-Tron Inst. Co.
Rawson Elec. Inst. Co.
Rubicon Co.
Saxl Instrument Co.
Sheldon Electric Corp.
United Cinephone Corp.

COLOR COMPARATORS, Photoelectric (See Color Analyzers, Photoelectric)

COLOR COMPARATORS, Visual
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Baird Associates
Bausch & Lomb Optical
Central Scientific Co.
Electronic Research Labs.
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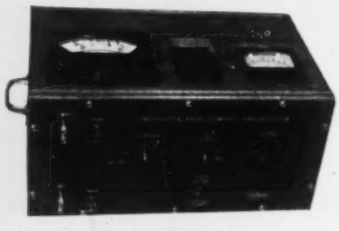

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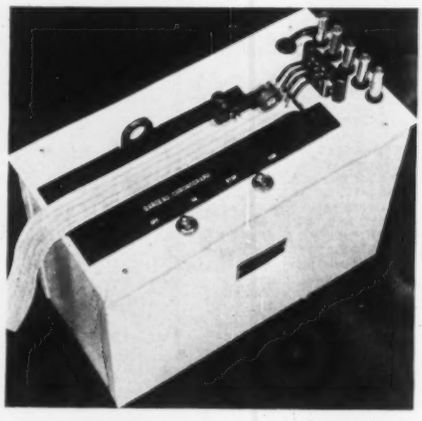

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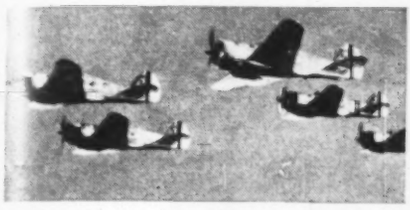

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COMBUSTION CONTROL EQUIPMENT (See Controllers, Automatic-Combustion)

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Daven Co.
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Industrial Inst., Inc.
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Gaertner Scientific
Hathaway Inst. Co.
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Bausch & Lomb Optical
Cambridge Inst. Co.
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COMPASSES, Azimuth
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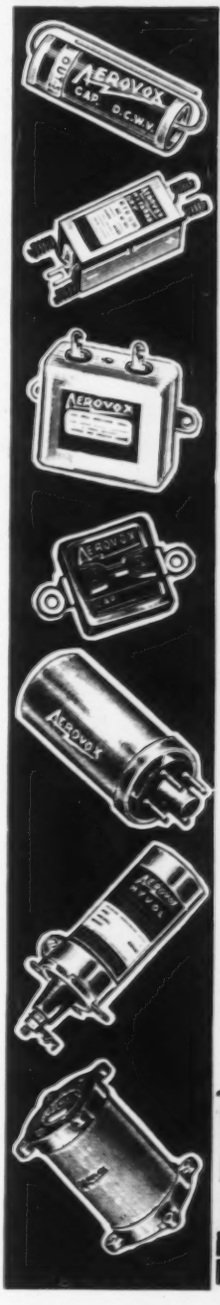

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For addresses, see pages 82-91

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COMPASSES, Gyro
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Geophysical Inst. Co.
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Leunold, Volpel & Co.
Negus, T. S. & J. D.
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Star Compass Co.
Taylor Inst. Cos.
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COMPASSES, Marine
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Baker Compass Co.
Bendix Marine Products
Bliss & Co.
Geophysical Inst. Co.
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Negus, T. S. & J. D.
Star Compass Co.

COMPASSES, Radio
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RCA Manufacturing Co.
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COMPASSES, Ship (See Compasses, Marine)

COMPASSES, Telltale (See Compasses, Marine)

COMPENSATION, Magnetic
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Esterline-Angus Co.
Industrial Inst. Inc.
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Natl. Aluminate Corp.
Rubicon Co.
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Shallcross Mfg. Co.

CONES, Pyrometric
Accurate Pyrometric Cone
Fish-Schurman Co.
Henderson & Co.
Orton Jr. Ceramic F'd'n

CONES, Slump
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Humboldt Mfg. Co.
Precision Scientific Co.
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CONTROL DRIVES (See Servo-Motors)

CONTROLS, AUTOMATIC (See Controllers, Automatic)

CONTROLLERS, AUTOMATIC (See also object of Measurement and Control)

"CONTROL" — NOTE —

The following pages deserve close study. Note for example that after numerous "Controllers, Automatic" there are three classes of "Controllers, Manual." Look up also under "Regulators" for many types thus termed by usage. Also "Thermostats" and other commonly-used names of specific-purpose automatic controllers.

As a rule, Automatic Controllers are "instrument-like" while devices known as Controls (preceded by name of application) are simple, single-purpose devices.

CONTROLLERS, AUTOMATIC, Ammonia (See Ammonia Control Equipment)

CONTROLLERS, AUTOMATIC, Beater (See Controllers, Automatic, Consistency)

CONTROLLERS, AUTOMATIC, Boiler Feed
Atlas Valve Co.
Bailey Meter Co.
Fisher Governor
Fischer & Porter
Foster Engg. Co.
Foxboro Co.
Henszey Co.
Kiely & Mueller
Manning, Maxwell&Moore
Mason-Neilan Regulator
(Cont'd)

CONTROLLERS, AUTOMATIC, Boiler Feed (Cont'd)
McDonnell & Miller
Mercon Regulator Co.
Natural Gas Equipment
Northern Equip. Co.
Republic Flow Meters Co.
Robertshaw Thermostat
Ruggles-Klingemann
Watts Regulator Co.
Wilgus Mfg. Co.

CONTROLLERS, AUTOMATIC, Boiler Water Concentration
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Fischer & Porter
Henszey Co.
Leeds & Northrup Co.
Republic Flow Meters
Manning, Maxwell&Moore

CONTROLLERS, AUTOMATIC, Bulk Material Level
Bin-Dicator Co.
Fuller Co.

CONTROLLERS, AUTOMATIC, Chlorine
Area Regulators, Inc.
Askania Regulator Co.
Builders-Providence
Everson Mfg. Co.
Fischer & Porter
LaMotte Chemical Prod.
Manning, Maxwell&Moore
National Meter Co.
Rascher & Betzold
Victor Equipment Co.
Wallace & Tiernan

CONTROLLERS, AUTOMATIC, Combustion
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Askania Regulator Co.
Bailey Meter Co.
Brooke Eng. Co.
(Cont'd)

CONTROLLERS, AUTOMATIC, Combustion (Cont'd)
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Cash Co.
Consulting & Engineering
Denver Fire Clay Co.
General Combustion Corp.
General Regulator Corp.
Hagan Corp.
Hays Corp.
Lantz-Phelps Corp.
Leeds & Northrup Co.
Mason-Neilan Reg. Co.
Minneapolis-Honeywell
National Airoil Burner
National Brass Co.
Natural Gas Equipment
Republic Flow Meters
Selas Company

CONTROLLERS, AUTOMATIC, Condensation
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Boylston Co.
Fisher Governor Co.
Friez & Sons
General Regulator Corp.
Manning, Maxwell&Moore
Seely Instrument Co.
Taglabue Mfg. Co.
Taylor Inst. Cos.

CONTROLLERS, AUTOMATIC, Condenser Leakage
Leeds & Northrup Co.
Manning, Maxwell&Moore

CONTROLLERS, AUTOMATIC, Consistency
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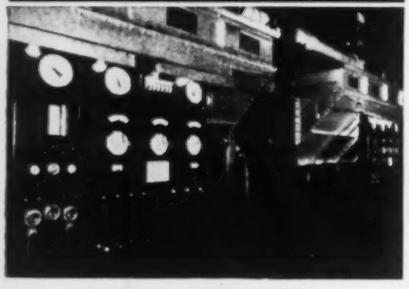
Bristol Co.
D'Este Co.
Foxboro Co.
Mason-Neilan Regulator
Merritt Engr. & Sales
Paprex Co.
Process Controls, Inc.

COMBUSTION CONTROL



All Sizes of Boilers
All Types of Firing

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Automatically maintains a constant steam pressure by controlling the fuel and air input to the boilers in balance with the boiler load.

EFFICIENT COMBUSTION
Automatically maintains maximum combustion efficiency over entire range of boiler rating, by controlling simultaneously the fuel and air input to boiler in measured proportions and in a fixed ratio.

LOAD DISTRIBUTION
Automatically distributes load equally among all the boilers, or the load can be distributed between the boilers as desired.

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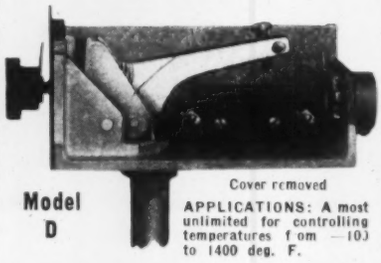

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APPLICATIONS: A most unlimited for controlling temperatures from —10) to 1400 deg. F.

SPECIAL FEATURES: Adjustable range is unusually large — Adjustment by large knob and dial outside of case — Easy reading 2 in. dial graduated in 100 divisions — Large screw terminals make wiring easy — Positive snap action Micro Switches — Levers rotate on 1/4 or 3/16 pins — No knife edges — Ridged castings — Operating Principle, differential expansion of solids, no liquids or gases to cause trouble — Tubes—suitable alloys for low temperatures, high temperatures, or corrosive conditions. These and other features make the model D

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Askania alone has the Jet Pipe Principle

ASKANIA
REGULATOR CO. CHICAGO

For addresses, see pages 82-91

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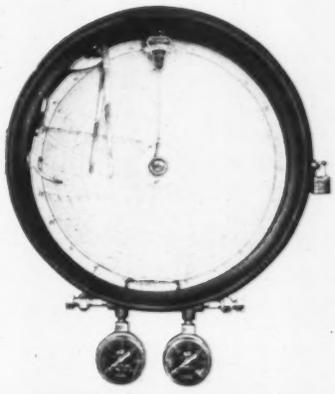

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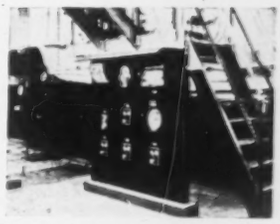


BAILEY METER *Combustion* CONTROL

● Bailey Meter Automatic Combustion Control of boilers results in substantial saving in fuel; increased boiler capacity; reduction of boiler and furnace maintenance; more time for operators to devote to general station maintenance; and improvement in the general character of service.

Bailey Meter Control makes possible the everyday operation of boilers at test efficiencies because it is a complete combustion control system which (1) automatically maintains steam pressure by supplying fuel and air simultaneously to boilers in accordance with changes in steam demand, (2) automatically maintains most economical fuel-air ratio by incorporating the Bailey Boiler Meter as an integral part of the system, (3) automatically maintains the desired furnace draft, and (4) automatically distributes load among boilers so that each unit carries its share.

This sturdy inexpensive air-operated control system has been applied to all sizes and types of boilers ranging from 200 h.p. upward. It is applicable to all fuels and all methods of firing.

For further information consult Sweet's Engineering Catalogs or write for bulletin No. 102-A.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O.
Bailey Meter Company Ltd., Montreal, Canada

CONTROLLERS, AUTOMATIC, Counting
Abrams Instrument
Bristol Co.
Eagle Signal Corp.
Lumenite Electric Co.
Manning, Maxwell&Moore
National Time & Signal
Seely Instrument Co.
Standard Electric Time
United Cinephone Corp.

CONTROLLERS, AUTOMATIC, Current (See Regulators)

CONTROLLERS, AUTOMATIC, Cycle
Abrams Instrument
Autocall Co.
Bailey Meter Co.
Barber Coleman
Bristol Co.
Brown Inst. Co.
Cramer & Co., Inc.
Denver Fire Clay Co
Elec. Switch Corp.
Fisher Governor
Foxboro Co.
Hagan Corp.
Hanlon-Waters, Inc.
Industrial Timer Corp.
Leeds & Northrup Co.
Manning, Maxwell&Moore
Mason-Neilan Reg. Co.
Minneapolis-Honeywell
Monitor Controller Co.
National Time & Signal
Seely Instrument Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.

CONTROLLERS, AUTOMATIC, Damper
Area Regulators, Inc.
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Barber-Coleman Co.
Bellfield Co.
Bristol Co.
Brooke Eng. Co.
Brown Inst. Co.
Cash Co.
Cook Electric Co.
Davis Reg. Co.
Denver Fire Clay Co.
Electronic Prod. Co
Fisher Governor
Foster Eng. Co.
Foxboro Corp.
Frie & Sons, Julien
Gleason-Avery, Inc.
Hagan Corp.
Hanlon-Waters, Inc.
Hays Corp.
Johnson Service Co.
Kiely & Mueller
Leeds & Northrup Co.
Mason-Neilan Regulator
Manning, Maxwell&Moore
Minneapolis-Honeywell
National Airoil Burner
Natural Gas Equipment
Penn Electric Switch Co.
Powers Regulator Co.
Preferred Utilities Mfg.
Republic Flow Meters
Ruggles-Klingemann
Schade Valve Mfg. Co.
Spence Eng. Co., Inc.
Tagliabue Mfg. Co.
Taylor Instrument Cos.
Watts Regulator Co.
White-Rodgers Electric
Wilgus Mfg. Co.

CONTROLLERS, AUTOMATIC, Density
Acme Regulator Co.
Area Regulators, Inc.
Automatic Valve Control
Lumenite Electric Co.
Manning, Maxwell&Moore
Mine & Smelter Supply
Tagliabue Mfg. Co., C. J.
Taylor Instrument Cos.

CONTROLLERS, AUTOMATIC, Desuperheat
Area Regulators, Inc.
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Brown Inst. Co.
Foxboro Corp.
Hagan Corp.
Leeds & Northrup Co.
Manning, Maxwell&Moore
Mason-Neilan Regulator
Mercon Regulator Co.
Northern Equip. Co.
Republic Flow Meters Co.
Spence Eng. Co., Inc.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.

CONTROLLERS, AUTOMATIC, Draft
Area Regulators, Inc.
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Barber-Coleman Co.
Boiler Room Equip.
Bristol Co.
Brooke Eng. Co.
Brown Inst. Co.
Cash Co.
Denver Fire Clay Co.
Foster Eng. Co.
(Cont'd)

CONTROLLERS, AUTOMATIC, Draft (Cont'd)
Foxboro Co.
Friez & Sons, Julien
General Regulator Corp.
Gleason-Avery, Inc.
Hagan Corp.
Hays Corp.
Leeds & Northrup Co.
Manning, Maxwell&Moore
Mason-Neilan Regulator
Minneapolis-Honeywell
National Airoil Burner
National Brass Co.
Preferred Utilities Mfg.
Republic Flow Meters
Ruggles-Klingemann
Tagliabue Mfg. Co.
Taylor Inst. Cos.

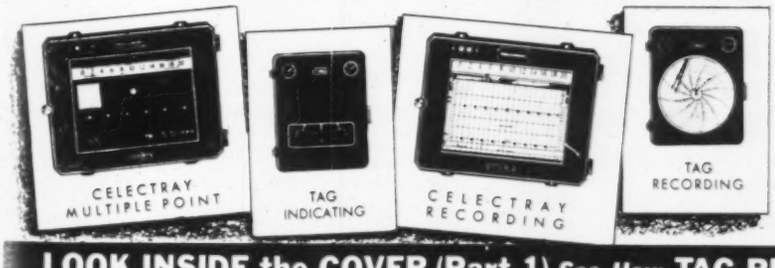
CONTROLLERS, AUTOMATIC, Feed Water
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Bellfield Co.
Fisher Governor
Fischer & Porter
Hagan Corp.
Hanlon-Waters, Inc.
Henszey Co.
Kiely & Mueller
Manning, Maxwell&Moore
Mason-Neilan Reg. Co.
McAlear Mfg. Co.
McDonnell & Miller
Mercon Regulator Co.
Natural Gas Equipment
Northern Equip. Co.
Republic Flow Meters
Ruggles-Klingemann
Schade Valve Mfg. Co.
Simplex Valve & Meter
Watts Regulator Co.
Wilgus Mfg. Co.

CONTROLLERS, AUTOMATIC, Filter Rate
Builders-Providence
Cochrane Corp.
Fischer & Porter
International Filter Co.
Manning, Maxwell&Moore
Mason-Neilan Reg. Co.
Taylor Inst. Cos.

CONTROLLERS, AUTOMATIC, Float
Allen-Bradley Co.
Autocall Co.
Automatic Control Co.
Automatic Temp. Control
Bailey Meter Co.
Bellfield Co.
Builders-Providence
Cash Co.
Cochrane Corp.
Cutler-Hammer, Inc.
Davis Regulator Co.
Fisher Governor
Furnas Electric Co.
Foster Engg. Co.
Foxboro Co.
Frick Co.
Hagan Corp.
Hanlon-Waters, Inc.
Kiely & Mueller
Leupold, Volpel & Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Mercon Regulator Co.
Northern Equipment
Penn Electric Switch
Powers Regulator Co.
Ruggles-Klingemann
Schade Valve Mfg. Co.
Simplex Valve & Meter
(Cont'd)

CONTROLLERS, AUTOMATIC, Float (Cont'd)
Spence Eng. Co., Inc.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Water Level Controls Co.

CONTROLLERS, AUTOMATIC, Flow
American Meter Co.
Area Regulators
Askania Regulator
Bailey Meter Co.
Bristol Co.
Brooke Engineering
Brown Inst. Co.
Builders-Providence
Cash Co.
Denver Fire Clay Co.
Electrimatic Corp.
Fischer & Porter
Foster Engg. Co.
Foxboro Co.
General Regulator Corp.
Hagan Corp.
Hanlon-Waters, Inc.
International Filter Co.
Leeds & Northrup Co.
Leupold, Volpel & Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Mercon Regulator Co.
Northern Equipment
Process Controls, Inc.
Republic Flow Meters
Simplex Valve & Meter
Spence Eng. Co., Inc.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Victor Equipment Co.
Wilgus Mfg. Co.



TAG CONTROLLERS

Wherever the control of plant operations presents a production problem, TAG Automatic Controllers of either the electrical or air-operated types offer competent solution. These TAG Instruments have opened the way to better processing methods by more precise control of temperature, pressure and the time in which they act. Write for catalogs.

C. J. TAGLIABUE MFG. CO.
Park & Nostrand Avenues, Brooklyn, N. Y.

LOOK INSIDE the COVER (Part 1) *See How* TAG RECORDERS *Save You Money* TAG

For addresses, see pages 82-91

CONTROLLERS, AUTOMATIC, Flow Proportioning
American Meter Co.
Arca Regulators, Inc.
Askania Regulator Co.
Autocall Co.
Automatic Temp. Control
Bailey Meter Co.
Barber-Coleman Co.
Bristol Co.
Brooke Eng. Co.
Brown Inst. Co.
Builders-Providence
Cash Co.
Cochrane Corp.
Cutler-Hammer, Inc.
Electronic Prod. Co.
Fischer & Porter
Foxboro Co.
General Regulator Corp.
Hagan Corp.
Hanlon-Waters, Inc.
Henszey Co.
Illinois Engr. Co.
International Filter Co.
Lammert & Mann Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Mercoid Regulator Co.
Republic Flow Meters Co.
Reynolds Gas Regulator
Simplex Valve & Meter
Spence Engr. Co., Inc.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Vergilio Co.
Victor Equipment Co.
Wheelco Inst. Co.

CONTROLLERS, AUTOMATIC, Fluid Proportioning
(See Controllers, Automatic, Flow Proportioning)

CONTROLLERS, AUTOMATIC, Frequency (See Regulators)

CONTROLLERS, AUTOMATIC, Furnace
Am. Gas Furnace Co.
Arca Regulators, Inc.
Askania Regulator Co.
Automatic Elec. Mfg. Co.
Automatic Temp. Control
Bailey Meter Co.
Barber-Coleman Co.
Bristol Co.
Brooke Eng. Co.
Brown Inst. Co.
(Cont'd)

CONTROLLERS, AUTOMATIC, Furnace (Cont'd)
Cash Co.
Cook Electric Co.
Defender Automatic Reg.
Denver Fire Clay Co.
Dickson Co.
Friez & Sons
Fulton Sylphon Co.
General Regulator Corp.
Gleason-Avery, Inc.
Hagan Corp.
Hays Corp.
Industrial Engr. Corp.
Johnston Mfg. Co.
Leeds & Northrup
Lindberg Eng. Co.
Manning, Maxwell&Moore
Marsh Corp.
Mason-Neilan Regulator
McCorkle Co.
Minneapolis-Honeywell
National Airoil Burner
National Brass Co.
Natural Gas Equipment
Paragon Electric Co.
Partlow Corp.
Payne Furnace & Supply
Penn Electric Switch
Perfex Corp.
Pyrometer Inst. Co.
Republic Flow Meters
Ruggles-Klingemann
Spence Engineering Co.
Spencer Thermostat Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
United Cinephone Corp.
Wheelco Inst. Co.
White Mfg. Co.
White-Rodgers Electric
Wilcus Mfg. Co.

CONTROLLERS, AUTOMATIC, Gas Density
Refinery Supply Co.

CONTROLLERS, AUTOMATIC, Gas Mixing (See Controllers, Automatic, Flow Proportioning)

CONTROLLERS, AUTOMATIC, Granular Material Level
Bin-Dicator Co.

CONTROLLERS, AUTOMATIC, Gravity
Arca Regulators, Inc.
Askania Regulator Co.
(Cont'd)

CONTROLLERS, AUTOMATIC, Gravity (Cont'd)
Bailey Meter Co.
Foxboro Co.
Manning, Maxwell&Moore
Mason-Neilan Regulator
Mine & Smelter Supply
Tagliabue Mfg. Co.
Taylor Inst. Cos.

CONTROLLERS, AUTOMATIC, Humidity
American Moistening Co.
Arca Regulators, Inc.
Atlas Valve Co.
Barber-Coleman Co.
Brabender Corp.
Bristol Co.
Brown Inst. Co.
Cramer & Co., Inc.
Dietert Co.
Electronic Prod. Co.
Fenwal, Inc.
Foxboro Co.
Friez & Sons
General Controls Co.
H-B Inst. Co., Inc.
Johnson Service Co.
Leeds & Northrup Co.
Manning, Maxwell&Moore
Mason-Neilan Regulator
McDonnell & Miller
Minneapolis-Honeywell
Moeller Instrument Co.
Moisture Register Co.
Parks-Cramer Co.
Penn Electric Switch
Phila. Thermometer Co.
Powers Regulator Co.
Robertshaw Thermostat
Sarco Co., Inc.
Scientific Inst. Co.
Seely Instrument Co.
Supreme Elec. Prods.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thwing-Albert Inst. Co.
Trerice Co., H. O.
Vaughn, G. F. Witt Co.
Weksler Thermometer

CONTROLLERS, AUTOMATIC, Humidity and Temperature (See Controllers, Automatic, Humidity and Controllers, Automatic, Temperature)

CONTROLLERS, AUTOMATIC, Lighting
Abrams Instrument
Betts & Betts
Cutler-Hammer, Inc.
Paragon Electric Co.
United Cinephone Corp.
Weston Elec. Inst. Corp.
Zenith Electric Co.

CONTROLLERS, AUTOMATIC, Liquid Level
Allen-Bradley Co.
American Meter Co.
Arca Regulators, Inc.
Askania Regulator Co.
Atlas Valve Co.
Autocall Co.
Automatic Control Co.
Automatic Temp. Control
Bailey Meter Co.
Bastian-Blessing Co.
Bellfield Co.
Bender Warrick
Bin-Dicator Co.
Boylston Co.
Bristol Co.
Builders-Providence
Brown Inst. Co.
Cash Co.
Cochrane Corp.
Control Corp.
Cutler-Hammer, Inc.
Davis Reg. Co.
Defender Automatic Reg.
Electronic Prod. Co.
D'Este Co.
Elec. Indicator Co.
Fisher Governor Co.
Foster Engg. Co.
Foxboro Co.
Frick Co.
Julien P. Friez & Sons
Fuller Co.
General Controls Co.
General Electric Co.
General Regulator Corp.
Guardian Elec. Mfg. Co.
Hagan Corp.
Hanlon-Waters, Inc.
Inferno Co.
International Filter Co.
Johnson Service Co.
Kiely & Mueller
Klipfel Mfg. Co.
Leeds & Northrup Co.
Leupold, Volpel & Co.
Lumenite Elec. Co.
Manning, Maxwell&Moore
Mason-Neilan Regulator
McAlear Mfg. Co.
McDonnell & Miller
(Cont'd)

CONTROLLERS, AUTOMATIC, Liquid Level (Cont'd)
Mercoid Corp.
Mercon Regulator Co.
Minneapolis-Honeywell
Moore Products Co.
Morey & Jones, Ltd.
Natural Gas Equipment
Northern Equip. Co.
Paragon Electric Co.
Penn Electric Switch
Photoswitch, Inc.
Powers Regulators Co.
Precision Therm.
Reliance Gauge Column
Republic Flow Meters
Rowan Controller Co.
Ruggles-Klingemann
Schade Valve Mfg. Co.
Fred H. Schaub Eng.
Simplex Valve & Meter
Spence Engineering Co.
Stets Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
United Cinephone Corp.
C. F. Warrick Co.
Water Levels Controls Co.
Watts Regulator Co.
Wheelco Inst. Co.
Wilcus Mfg. Co.

CONTROLLERS, AUTOMATIC, Load (See Regulators)

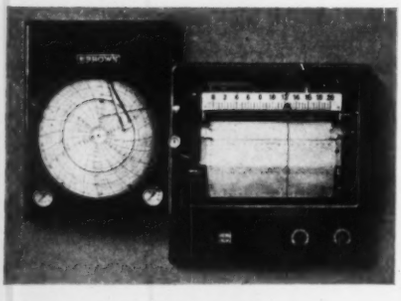
CONTROLLERS, AUTOMATIC, Moisture (See Controllers, Automatic, Humidity)

CONTROLLERS, AUTOMATIC, Phase (See Regulators)

CONTROLLERS, AUTOMATIC, Power Factor (See Regulators)

CONTROLLERS, AUTOMATIC, Pressure & Vacuum
Acme Regulator Co.
Allen-Bradley Co.
American Meter Co.
Arca Regulators, Inc.
Askania Regulator Co.
Arca Regulators, Inc.
Atlas Valve Co.
Autocall Co.
Automatic Control Co.
Automatic Temp. Control
Bailey Meter Co.
Baldwin-Southwark Corp.
Bastian-Blessing Co.
(Cont'd)

CONTROLLERS, AUTOMATIC, Pressure & Vacuum (Cont'd)
Bellfield Co.
Boekel & Co.
Boylston Co.
Bristol Co.
Brooke Eng. Co.
Brown Inst. Co.
Builders Iron Foundry
Cash Co.
Connelly Iron Sponge
Cutler-Hammer, Inc.
Davis Reg. Co.
D'Este Co.
Dickson Co.
Eclipse Fuel Engg.
Emerson Apparatus Co.
Fisher Governor Co.
Ford Reg. Valve Co.
Foster Engg. Co.
Foxboro Co.
Fredericks, George
Friez & Sons
Fulton Sylphon Co.
Furnas Electric Co.
Gas Appl. Specialties
General Controls Co.
General Electric Co.
General Regulator Corp.
Gen. Sales & Prod.
Hagan Corp.
Hanlon Waters, Inc.
Hays Corp.
Hoke, Inc.
Hydraulic Press Co.
Illinois Engg. Co.
Klipfel Mfg. Co.
Lammert & Mann Co.
Leeds & Northrup Co.
Leslie Co.
Manning, Maxwell&Moore
Marsh Corp.
Mason-Neilan Regulator
McAlear Mfg. Co.
McDonnell & Miller
Mercoid Corp.
Mercon Regulator Co.
Minneapolis-Honeywell
National Time & Signal
Natural Gas Equip. Inc.
Northern Equip. Co.
Penn Electric Switch
Perfex Corp.
Powers Regulator Co.
Precision Therm.
Ranco Inc.
Republic Flow Meters
Reynolds Gas Regulator
Robertshaw Thermostat
Ruggles-Klingemann
(Cont'd)



BROWN CONTROLLERS

Electric or Air-Operated Types

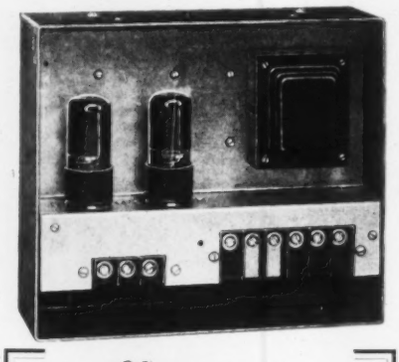
Brown instruments are supplied as electric or air-operated controllers, complete with valves, motor mechanisms and relays, for automatically controlling temperatures, pressures, flows, liquid levels, humidity, etc. Instruments indicate or record while they control power plant or industrial processes. Write for Catalog 8903.

Brown Pneumatic Remote Transmission System

For remote transmission of measurement and control of temperatures, pressures, flows and liquid levels in hazardous atmospheres. Write for Catalog 9400.

THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4482 Wayne Avenue, Philadelphia, Pa.

BROWN INSTRUMENTS
AND
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS
To Measure and Control is to Economize

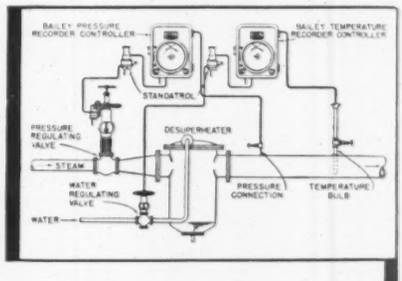


Electronic
LIQUID LEVEL CONTROLS
Floatless **Non-mechanical**

FARATRON LIQUID LEVEL CONTROLS operate on the electronic or radio principle. Liquid, touching or leaving the stainless steel electrode in the container, changes the electronic impulse to activate a distant relay.

Operates in any aqueous liquid at any temperature or pressure. Controls signals or operates pumps and valves. Absolutely automatic—requires no attention.

LUMENITE ELECTRIC CO.
407 S. Dearborn St. Chicago, Ill.



DESUPERHEATING & PRESSURE REDUCING CONTROL

● Bailey Meter Control of desuperheating and pressure reducing incorporates standard Bailey Recorder-Controllers for both pressure and temperature, as well as a special Bailey Reducing Valve equipped with valve positioner and air cooled packing gland.

The control system is air-operated and is arranged to maintain the desired final steam temperature by controlling the quantity of water fed to a cartridge type desuperheater. This temperature is measured by a sensitive bare bulb temperature recorder-controller with the temperature bulb located at the ● outlet of the desuperheater.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O.
Bailey Meter Company Ltd., Montreal, Canada

For addresses, see pages 82-91

COMPLETE INSTRUMENTATION

for INDUSTRIAL PROCESSES

CONTROLLERS for temperature, pressure, absolute pressure, rate of flow and liquid level. Air-operated potentiometer controllers. Exclusive features resulting in unexcelled performance.

RECORDERS of temperature, pressure, flow level, motion, absolute pressure.

INDICATORS of temperature, pressure, flow and level.

TRANSMISSION SYSTEMS, pneumatic type with exceptionally fast response. Electric signalling systems.

MASONEILAN

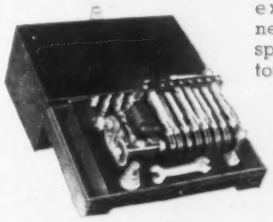
MASON-NEILAN REGULATOR CO.
1185 ADAMS ST., BOSTON, MASS., U. S. A.

Automatic TIMING ... by atc

Dependable Control Over Process Periods or Process Actions

Accurate control of processes and operations on the basis of TIME, is a major business with ATC. Installations, numbered in the thousands, are daily paying their way with most reliable—therefore most economical—performance. Standard models will start, stop or repeat operations on one to forty load circuits. Adjustment can be exactly what is needed, down to a split second. The total cycle can be seconds or any number of hours.

An ATC Dial Timer available in 40 standard adjustable types



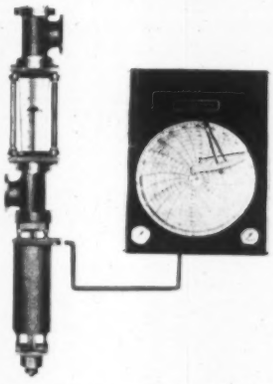
An 8-circuit Cam Timer used to control eight steps of a process

Send for CATALOG B-2

Representatives in Principal Cities

AUTOMATIC TEMPERATURE CONTROL CO.
25 E. Logan St. Philadelphia, Pa.

FISCHER & PORTER
ROTA-MATIC



FOR AUTOMATIC CONTROL

The Rota-matic is a fully automatic controlling rotameter. It will maintain a constant flow rate regardless of process lag or continual load changes. The control point may be set at any flow over the entire range of the rotameter. Handles corrosive and viscous fluids which no other controller will handle. Also gives permanent chart record of flow rate and registers total flow.

Send for Bulletin 51-B

FISCHER & PORTER CO.
23 COUNTY LINE ROAD
HATBORO PENNSYLVANIA

Wheelco Flame-otrols
Combustion Safeguards

Wheelco Flame-otrols provide positive safety against combustion explosions resulting from flame failure. Flame-otrols also prevent entry of fuel into the combustion chamber until adequate means are provided for establishing ignition.

The Flame-otrol is the only combustion safeguard approved by both Underwriters' Laboratories and Associated Factory Mutual Laboratories for all types of fuel.

Complete description given in Bulletin No. L2-2. Write for your copy, today.

Wheelco Instruments Co.
833 HARRISON STREET - - - CHICAGO, ILLINOIS

STEVENS
CONTROLS
for
Water Levels
and Flow.

RECORDERS
•
INDICATORS

Leupold, Volpel & Co.

HYDROGRAPHIC ENGINEERING INSTRUMENTS SURVEYING

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PORTLAND, OREGON

CONTROLLERS, AUTOMATIC, Pressure & Vacuum (Cont'd)
Schade Valve Mfg. Co.
Schwien Eng. Co.
Scientific Inst. Co.
Seely Instrument Co.
Spence Engineering Co.
Spencer Thermostat Co.
Sterling Eng. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co., H. O.
Uehling Instrument Co.
Vapor Recovery Systems
Vaughn-G. E. Witt Co.
Victor Equipment Co.
Ward Leonard Elec. Co.
Water Level Controls Co.
Watts Regulator Co.
Waugh Laboratories
Wheelco Inst. Co.
White-Rodgers Electric
Wilgus Mfg. Co.
Wood, Harry W.

CONTROLLERS, AUTOMATIC, Pyrometric
Am. Gas Furnace Co.
Askania Regulator Co.
Automatic Temp. Control
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Burling Inst. Co.
Dickson Co.
Electronic Lab.
Electronic Prod. Co.
Engelhard, Chas.
Ferner Co.
Foxboro Co.
General Elec. Co.
G-M Labs!
Hoskins Mfg. Co.
Ill. Testing Labs.
Leeds & Northrup Co.
Lewis Engg. Co.
Lindberg Eng. Co.
Manning, Maxwell&Moore
Mason-Neilan Regulator
Partlow Corp.
Pyrometer Instrument Co.
Seely Instrument Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thwing-Albert Instrument
Uehling Instrument Co.
Wheelco Inst. Co.

CONTROLLERS, AUTOMATIC, Radio Remote
Am. Automatic Electric
Guardian Elec. Mfg. Co.
United Cinephone Corp.

CONTROLLERS, AUTOMATIC, Rate-Volume (See Controllers, Automatic, Flow)

CONTROLLERS, AUTOMATIC, Refrigeration
Allen-Bradley Co.
Brown Inst. Co.
Cash Co.
Cutler-Hammer, Inc.
D'Este Co.
Dickson Co.
Electrimatic Corp.
Frick Co.
Friez & Sons, Julien
Fulton Sylphon Co.
General Controls Co.
Illinois Engr. Co.
Lumenite Elec. Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Mercoid Corp.
Minneapolis-Honeywell
Penn Electric Switch
Perfex Corp.
Phila. Thermometer Co.
Ranco, Inc.
Sarco Co., Inc.
Schade Valve Mfg. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
White-Rodgers Electric

CONTROLLERS, AUTOMATIC, RKVA (See Regulators)

CONTROLLERS, AUTOMATIC, Specific Gravity (See Controllers, Automatic, Gravity)

CONTROLLERS, AUTOMATIC, Speed (See Tachometric below)

CONTROLLERS, AUTOMATIC, Stoker (See Controllers, Automatic, Furnace)

CONTROLLERS, AUTOMATIC, Strain-Rate & Stress-Rate
Baldwin-Southwark Corp.

CONTROLLERS, AUTOMATIC, Synchronizing (See Regulators)

CONTROLLERS, AUTOMATIC, Tachrometric
Abrams Instrument
Askania Regulator Co.
Bailey Meter Co.
(Cont'd)

CONTROLLERS, AUTOMATIC, Tachometric (Cont'd)
Barbour Stockwell Co.
Brown Inst. Co.
Cutler-Hammer, Inc.
Foxboro Co.
General Regulator Corp.
Hagan Corp.
Mason-Neilan Regulator
Moisture Register Co.
Monitor Controller Co.
Republic Flow Meters

CONTROLLERS, AUTOMATIC, Temperature (See Pyrometric above or Thermometric below)

CONTROLLERS, AUTOMATIC, Temperature-Time (See Controllers, Automatic Thermometric; Controllers, Automatic, Thermostatic; Controllers, Automatic, Time)

CONTROLLERS, AUTOMATIC, Thermometric
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Burling Inst. Co.
Dickson Co.
Edison Electrical Controls
Electrimatic Corp.
Electro-Medical Lab.
Emerson Apparatus Co.
Fish-Schurman Co.
Foxboro Co.
Friez & Sons
General Elec. Co.
General Regulator Corp.
Gotham Inst. Co.
H-B Inst. Co., Inc.
Ill. Testing Labs.
Kessler Co.
Lindberg Eng. Co.
Manning, Maxwell&Moore
Marsh Corp.
McAlear Mfg. Co.
Minneapolis-Honeywell
Moeller Instrument Co.
Moisture Register Co.
Paragon Electric Co.
Parks-Cramer Co.
Partlow Corp.
Precision Therm.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.
Weksler Thermometer
Wheelco Inst. Co.

CONTROLLERS, AUTOMATIC, Thermostatic
Accuracy Scientific Inst.
Allen-Bradley Co.
American Inst. Co.
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Barber-Coleman Co.
Boekel & Co.
Bristol Co.
Boiler Room Equip.
Brown Inst. Co.
Burling Inst. Co.
Bushnell & Nevins
Cook Electric Co.
Cramer & Co., Inc.
D'Este Co.
Dickson Co.
Edison Electrical Controls
Ermstat Co.
Fenwal, Inc.
Fish-Schurman Co.
Friez & Sons
Foster Eng. Co.
Fulton Sylphon Co.
General Controls Co.
General Elec. Co.
Gleason-Avery Inc.
Gotham Inst. Co.
H-B Inst. Co.
H. & H. Thermostats
Illinois Engr. Co.
Industrial Engr. Corp.
Johnson Service Co.
Kiely & Mueller
Klipfel Mfg. Co.
Leslie Co.
Manning, Maxwell&Moore
Marsh Corp.
McCorkle Co.
Mercoid Corp.
Minneapolis-Honeywell
Moisture Register Co.
Partlow Corp.
Penn Electric Switch
Perfex Corp.
Phila. Thermometer Co.
Powers Regulator Co.
Precision Therm.
Ranco Inc.
Rascher & Betzold
Robertshaw Thermostat
Ruggles-Klingemann
Sarco Co., Inc.
Spence Engineering Co.
Spencer Thermostat Co.
Sterling Eng. Co.
Struthers-Dunn
Tagliabue Mfg. Co.
Trane Co.
Vaughn-G. E. Witt Co.
Weston Elec. Inst. Corp.
White Mfg. Co.
White-Rodgers Elec. Co.

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Wheelco offers a complete line of Temperature Controllers, employing the famous "Radio Principle" Control System.

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PROGRAM CONTROLS—PROPORTIONING CONTROLLERS, RESISTANCE THERMOMETER CONTROLLERS

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● Bailey Meter Company offers three distinct feed water control systems. They are (1) the Thermo-hydraulic Feed Water Regulator which is suitable for the majority of small boilers operating at relatively low pressures. This regulator operates from water level alone and is provided with a fully balanced tight seating V-port regulating valve designed to give a straight line characteristic. It offers the advantages of low installation cost, removable valve parts and independence of valve location.

(2) The Single-Element air-operated feed water control system is recommended for installations on which smooth regulation of feed water flow is desired, and a wide regulating range cannot be used. This system is controlled by water level alone as measured by a Bailey Boiler Drum Water Level Recorder.

(3) Bailey Three-Element feed water control is recommended for high capacity low water storage boilers operating at high pressures or for boilers operating at medium pressures with violent load fluctuations. This system is based on actual measurement of water flow to the boiler, steam flow from the boiler and water level within the boiler, and is adjusted primarily to control the rate of water flow to the boiler so that it equals the rate of steam flow from the boiler.

For detailed information consult Sweet's Engineering Catalogs or request bulletin ● No. 105-A.

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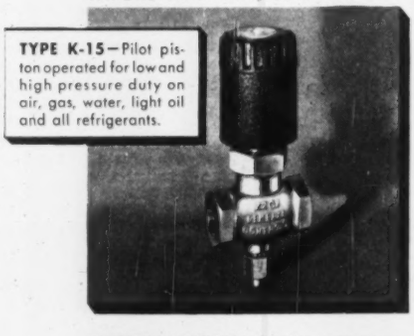

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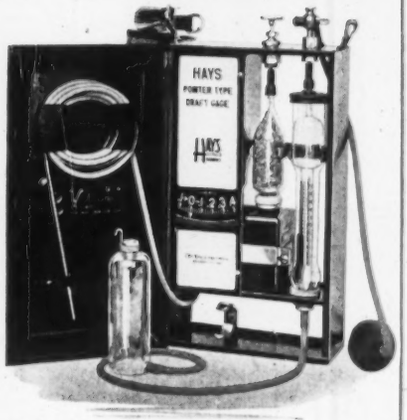

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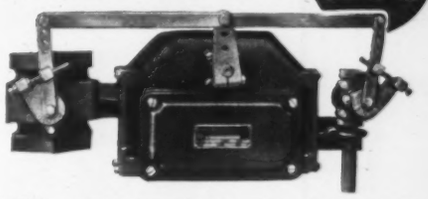

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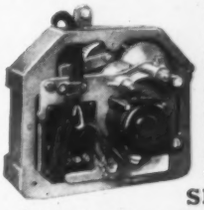

SEND for CATALOG A-2

which describes the various standard units

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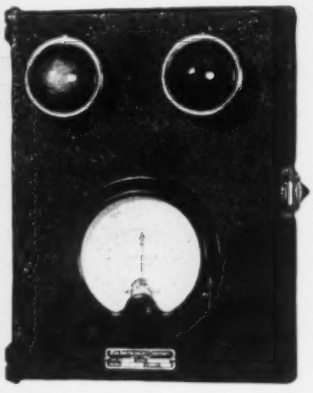

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Am. Gas Accumulator
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Automatic Elec. Co.
Automatic Elec. Mfg. Co.
Automatic Temp. Control
Bacon Elec. Timer
Bailey Meter Co.
Barber Coleman
Betts & Betts
Bristol Co.
Brown Inst. Co.
Clare & Co.
Controls, Inc.
Cramer & Co., Inc.
Eagle Signal Corp.
Edison Electrical Prods
Elec. Switch Corp.
Fisher Governor
Foxboro Co.
Friez & Sons, Julien
General Elec. Co.
Gorman Inst. Co.
Guardian Electric Mfg.
Industrial Timer Corp.
Johnson Service Co.
Leeds & Northrup
Luers, J. Milton
Manning, Maxwell&Moore
Mason-Neilan Regulator
Minneapolis-Honeywell
Monitor Controller Co.
National Time & Signal
Northwestern Clock Co.
Paragon Electric Co.
Partlow Corp.
Penn Electric Switch
Perfex Corp.
Photoswitch, Inc.
Photovolt Corp.
Powers Regulator Co.
Production Instrument
Rhodes, Inc., M. H.
Sangamo Elec. Co.
Seely Instrument Co.
Stromberg Electric Co.
Struthers-Dunn
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thomas Clock Co., Seth
Tork Clock Co.
United Cinephone Corp.
Wadsworth Elec. Mfg.
Walser Automatic Timer
Ward Leonard
Zenith Electric Co.

CONTROLLERS, AUTOMATIC, Vacuum

(See Controllers, Automatic, Pressure)

CONTROLLERS, AUTOMATIC, Valve (See Valve-Operating Devices)

CONTROLLERS, AUTOMATIC, Viscosity

Brahender Corp.
Bailey Meter Co.
General Elec. Co.
Paprex Co.
Scientific Inst. Co.
United Cinephone Corp.

CONTROLLERS, AUTOMATIC, Voltage (See Regulators)

CONTROLLERS, AUTOMATIC, Volume (See Controllers, Automatic, Flow)

CONTROLLERS, MANUAL (Non-automatic), Field

Cutler-Hammer, Inc.
General Elec. Co.
Monitor Controller Co.
National Elec. Controller
Schaefer Bros. Co.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.

CONTROLLERS, MANUAL (Non-automatic), Hydraulic

Hydraulic Controls

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Cutler-Hammer, Inc.
Elec. Controller & Mfg.
Furnas Electric Co.
General Elec. Co.
Monitor Controller Co.
National Elec. Controller
Schaefer Bros. Co.
Superior Electric Co.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.

CONTROLLERS, MANUAL (Non-automatic) Rheostatic

Allen-Bradley Co.
Beck Bros.
Cutler-Hammer, Inc.
Elec. Controller & Mfg.
General Elec. Co.
Monitor Controller Co.
National Elec. Controller
Ohmite Mfg. Co.
Rubicon Co.
Schaefer Bros. Co.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.

CONTROL SYSTEMS (See Controllers, Automatic)

COUNTERS, Alarm

Durant Mfg. Co.

COUNTERS, Colony

Fisher Scientific Co.
Sargent & Co.
Spencer Lens Co.
Thomas Co., Arthur H.

COUNTERS, Cycle

Bristol Co.
General Elec. Co.
Moisture Register Co.
Paragon Electric Co.
Raytheon Mfg. Co.
Seely Instrument Co.
Southwestern Electronics
Standard Elec. Time Co.
States Co.
United Cinephone Corp.
Westinghouse Elec. & Mfg.

COUNTERS, Footage

Adde & Co.
Bristol Co.
Durant Mfg. Co.
Elec. Tachometer Corp.
McDonnell Odometer Co.
Ohmer Register Co.
Saxl Inst. Co.
Southwestern Electronics
Talley-Meter Co.
United Cinephone Corp.
Veeder-Root, Inc.

COUNTERS, Geiger-Muller

Cambridge Inst. Co.
Geophysical Instrument
Vacutron, Inc.
Welch Mfg. Co.

COUNTERS, Hour

Cramer & Co., Inc.
Elec. Tachometer Corp.
General Elec. Co.
Ohmer Register Co.
Paragon Electric Co.
Southwestern Electronics
United Cinephone Corp.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

COUNTERS, Lumber

Adde & Co.
Durant Mfg. Co.
Keuffel & Esser Co.
McDonnell Odometer Co.
Moisture Register Co.
Tally-Meter Co.

COUNTERS, Photoelectric

Ess Instrument Co.
Lumenite Electric Co.
Paver-Sills Co.
Photobell Corp.
Production Instrument
Vacutron, Inc.
United Cinephone Corp.
Weston Electrical Inst.

COUNTERS, Production

Adde & Co.
Bristol Co.
Cramer & Co., Inc.
Durant Mfg. Co.
Elec. Tachometer Corp.
Guardian Elec. Mfg. Co.
Hart Mfg. Co., R. E.
McDonnell Odometer Co.
Moisture Register Co.
Ohmer Register Co.
Photobell Corp.
Production Inst. Co.
Richardson Scale Co.
Rowe Radio Research
Shallcross Mfg.
Struthers-Dunn
United Cinephone Corp.
Veeder-Root, Inc.

COUNTERS, Revolution

Adde & Co.
Bristol Co.
Boulin Instrument Corp.
Cummings Machine Wks.
Durant Mfg. Co.
Elec. Tachometer Corp.
Elgin National Watch
Gurley, W. & L. E.
Hart Mfg. Co., R. E.
Ideal Commutator Dresser
Jaeger Watch Co.
Jones Motrola Sales Co.
Knopf, Paul
Marsh Corp., Jas. P.
Mason-Neilan Regulator
(Cont'd)

COUNTERS, Revolution
(Cont'd)

McDonnell Odometer Co.
McNab of Bridgeport
Moisture Register Co.
Ohmer Register Co.
Production Inst. Co.
George Scherr Co., Inc.
Southwestern Electronics
Speidel & Co.
Standard Elec. Time Co.
Star Brass Mfg. Co.
Starrett Co., L. S.
Veeder-Root, Inc.
Warren-Knight Co.
Zernickow Co., O.

COUNTERS, Stroke

Adde & Co.
Bristol Co.
Clay-Adams Co.
Durant Mfg. Co.
Eagle Signal Corp.
Guardian Elec. Mfg. Co.
Hart Mfg. Co., R. E.
International Register Co.
McDonnell Odometer Co.
Moisture Register Co.
Photobell Corp.
Ohmer Register Co.
Production Inst. Co.
Southwestern Electronics
United Cinephone Corp.
Veeder-Root, Inc.

COUNTERS, Twist

McDonnell Odometer Co.
Saxl Instrument Co.
Scott Co., Henry L.
Southwestern Electronics
Suter, Alfred
Veeder-Root, Inc.

COURSE PROTRACTORS (See Protractors, Course)

CRYSTALS, Piezoelectric

Bausch & Lomb Opt.
Bliley Electric Co.
Brush Development Co.
General Radio Co.
Premier Crystal Labs.
RCA Manufacturing Co.
Valpey Crystals
Zeiss, Inc., Carl

CRYSTALS, Quartz

Bliley Electric Co.
Fuess, Inc.
General Radio Co.
Master Optical Co.
Premier Crystal Labs.
RCA Manufacturing Co.
Valpey Crystals

CRYSTALS, Rochelle Salt

Brush Development Co.

CRYSTALS, Tourmaline

Fuess, Inc.
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Zeiss, Inc., Carl

CUBIC FOOT BOTTLES (See Bottles, Cubic Feet)

CURRENT LIMITERS

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General Elec. Co.
Monitor Controller Co.
RCA Manufacturing

CURRENT METERS (See Meters, Current)

CURRENT REGULATORS (See Regulators, Current)

CURVE TRACERS (See Drawing Instruments)

CUTMETERS

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Coats Mach. Tool Co.
McDonnell Odometer Co.
Veeder-Root, Inc.

CYCLE CONTROLLERS (See Controllers, Automatic, Cycle)

CYCLE COUNTERS (See Counters, Cycle)

CYCLOMETERS

Veeder-Root, Inc.

CYLINDERS, GRADUATED (See Apparatus Laboratory, Glass)

DECELEROMETERS (See Accelerometers)

DECIBEL METERS (See Sound Level Meters)

DEEP SEA INSTRUMENTS

Ballauf Mfg. Co.
Moeller Inst. Co.

DEFLECTION TESTERS, Light Wave (See Testers, Deflection, Light Wave)

DEFORMETERS

Baldwin-Southwark Corp.
Dietert Co.

DELINEASCOPES

Bausch & Lomb
Central Scientific Co.
Leitz, Inc.
Spencer Lens Co.

DEMAND, Indicators (See Meters, Demand, Electric; Meters, Demand, Gas)

DEMAND, Recorders (See Meters, Demand)

DEMAND — LIMITING DENSIMETERS

Natl. Aluminate Corp.
Pfaltz & Bauer, Inc.
Tagliabue Mfg. Co.

DENSITOMETERS

Applied Research Labs.
Baird Associates
Bausch & Lomb Opt.

DENSOMETERS

Akatos, Inc.
Gaertner Scientific Corp.
Gurley, W. & L. E.
Zeiss, Inc., Carl

DEPTH, Indicators, Length

Chicago Dial Ind. Co.
Federal Prod. Corp.
Gen. Engg. & Model Wks.
Starrett Co.

DEPTH, Indicators, Liquid (See Gages, Liquid Level, Indicating)

DEPTH INDICATORS, Sea

Moeller Inst. Co.

DEPTH, Recorders, Liquid (See Gages, Liquid Level, Indicating)

DETECTOR CARS, For Testing Rails in Track

Sperry Products, Inc.

DETECTORS, Benzol

Davis Emergency Equip.
Mine Safety Appliances

DETECTORS, Carbon Monoxide

Mine Safety Appliances

DETECTORS, Gas

Heiland Research

DETECTORS, Hydrogen Cyanide

Mine Safety Appliances

DETECTORS, Hydrogen Sulphide

Mine Safety Appliances

DETECTORS, Mercury Vapor

Mine Safety Appliances

DETECTORS, Metal

Associated Research
General Elec. Co.
Geophysical Inst. Co.
Ill. Testing Labs.
Luxtrol Co., Inc.
McFarlin Co.
RCA Manufacturing Co.
United Cinephone Corp.

DETECTORS, Methane

Davis Emergency Equip.
Heiland Research
Mine Safety Appliances

DETECTORS, Mine Gases

Bushnell & Nevins
Heiland Research
Mine Safety Appliances

DETECTORS, Potential

Littelfuse Labs.
Minerallac Electric Co.

DETECTORS, Radium

American Inst. Co.

DETECTORS, Vibration (See Vibroscopes)

DETECTORS, Voltage

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Gehr Physical Laboratory
Ideal Commutator Dresser
Meter Devices Co.
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Gen. Engg. & Model Wks.
Premier Crystal Labs.
Scherr Co., Geo.
Scientific Inst. Co.
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DIFFERENTIAL PRESSURE (See Controllers, Gages, etc., Pressure)

DIFFRACTION GRATING (See Grating, Diffraction)

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Dietert Co.
Ferner Co.
Gaertner Scientific Corp.
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Rockwell Co., Stanley P.
Zeiss, Inc., Carl

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Ferris Inst. Corp.
General Elec. Co.
General Radio Co.
Instrument Resistors
International Resista
Mallory & Co.
Measurements Corp.
Muter Company
Ohmite Mfg. Co.
RCA Manufacturing
Sensitive Research In
Shallcross Mfg. Co.
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Ward Leonard Elec.

DIVIDING HEAD, OPTICAL

Gaertner Scientific
Zeiss, Inc., Carl

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Hayes Scientific Apps.
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Kern Co.
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Nelson Section Liner
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Soltmann, Inc., E. G.
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Warren-Knight Co.
Weber Co., F.
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Sargent & Co.
Scientific Glass Apparatus
Scientific Inst. Co.
Willson Products, Inc.
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DYNAMOMETERS, Hydraulic
Taylor Mfg. Corp.

DYNAMOMETERS, Pull Rod
Hathaway Inst. Co.
Hayes Scientific Apps.
Martin Decker Corp.
Seederer-Kohlbusch, Inc.

DYNAMOMETERS, Rotary Absorption
Bristol Co.
General Elec. Co.
L. A. B. Corp.
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DYNAMOMETERS, Tension
Baldwin-Southwark Corp.
Boulin Instrument Corp.
Dillon & Co.
Hathaway Inst. Co.
Olsen Testing Machine
Riehle Div.
Seederer-Kohlbusch
Thwing-Albert

DYNAMOMETERS, Transmission
Hathaway Instrument
Rubicon Co.
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Biddle Co., Jas. G.
Geophysical Inst. Co.
Heiland Research
Industrial Insts. Inc.
Rawson Electrical Inst.
Rubicon Co.
Shallcross Mfg.
Sticht & Co.

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Braun Corp.
Central Scientific Co.
Eimer & Amend
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Rascher & Betzold
Tagliabue Mfg. Co.

EBULLISCOPE (See Ebulliometers)

ECHELON GRATING (See Grating, Echelon)

ELECTRIC WAVE FILTER SECTIONS
Andrew, Victor J.
Bliley Electric Co.
Clough-Brengle Co.
General Radio Co.
United Transformer Corp.

ELECTROMETERS, Quadrant
Cambridge Inst. Co.
Central Scientific Co.
Pfaltz & Bauer, Inc.
Rubicon Co.
Testrite Instrument Co.
Welch Mfg. Co.

ELECTROMETERS, String
Cambridge Inst. Co.
Geophysical Inst. Co.
Pfaltz & Bauer, Inc.

ELECTRONIC METERS (See Meters, Electronic)

ELECTROPLATING SOLUTION TESTING APPARATUS
Central Scientific Co.
Fisher Scientific Co.
Hellige, Inc.
Industrial Insts. Inc.
Pfaltz & Bauer, Inc.
Sargent & Co.
Taylor & Co., Inc., W. A.
Thwing-Albert Inst. Co.

ELECTROSCOPES
Chicago Apparatus Co.
Denver Fire Clay Co.
Geophysical Inst. Co.
Pfaltz & Bauer, Inc.

ELLIPSOGRAPHS (See Drawing Instruments)

END MEASURES
Pratt & Whitney

ENGINE INDICATORS (See Indicators, Engine)

ENGINE INDICATOR REDUCING MOTION (See Reducing Motion, Engine Indicator)

EUDIOMETERS
Ace Glass Inc.
Central Scientific Co.
Eimer & Amend
Machlett & Son

EUSCOPES
Bausch & Lomb Optical

EXPANSION TEST APPARATUS (See Testers, Expansion)

EXTENSOMETERS
American Inst. Co.
Baldwin-Southwark Corp.
Brabender Corp.
Cambridge Inst. Co.
Eitzen Co.
Ferner Co.
Gen. Engg. & Model Wks.
Hayes Scientific Apps.
Metzger & Son
Olsen Testing Machine

EYEGLASSES, POLARIZED (for Photoelastic Work or Strain Observation, etc.)
Polarizing Inst. Co.
Zeiss, Inc., Carl

FADE-OMETER
Atlas Elec. Devices Co.
Gen. Elec. Vapor Lamp

FAULT LOCATORS
Industrial Insts. Inc.
Leeds & Northrup
Rawson Elec. Inst. Co.
Rubicon Co.
Shallcross Mfg. Co.
Tobe Deutschmann Corp.

FEED WATER METERS
Bailey Meter Co.
Brown Inst. Co.
Builders-Providence
Central Station Steam
Cochrane Corp.
Elec. Indicator Co.
Fischer & Porter
Foxboro Co.
Henszey Co.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Republic Flow Meters
Simplex Valve & Meter
Tagliabue Mfg. Co.

FEED WATER TESTING APPARATUS
Burrell Technical Supply
Central Scientific Co.
Cochrane Corp.
Electronic Products Co.
G. M. Mfg. Co., Inc.
Hellige, Inc.
Industrial Insts. Inc.
LaMotte Chemical Prod.
Leeds & Northrup Co.
Pfaltz & Bauer, Inc.
Taylor & Co., Inc., W. A.

FIELD RHEOSTATS (See Rheostats, Field)

FIELD-STRENGTH MEASURING SETS
Andrew, Victor J.
Federal Telegraph Co.
Ferris Inst. Corp.
McFarlin Co.
Measurements Corp.
RCA Manufacturing Co.
Tobe Deutschmann Corp.

FILLING MACHINES, Automatic
Anderson Bros. Mfg. Co.
Bowser & Co.
Gump Co., B. F.
Richardson Scale Co.
Triangle Package Mach.

FILLING MACHINES, Bag
Gump Co., B. F.
Richardson Scale Co.
Triangle Package Mach.

FILLING MACHINES, Barrel
Bowser & Co.

FILLING MACHINES, Can
Anderson Bros. Mfg.
Bowser & Co.
Gump Co., B. F.
Triangle Package Mach.

FILLING MACHINES, Carton
Gump Co., B. F.
Triangle Package Mach.

FILTERS, Light (See also Filters, Optical)
American Inst. Co.
Bausch & Lomb Opt.
Central Scientific Co.
Corning Glass Works
Fish-Schurman Co.
Fuess, Inc.
Kollmorgen Optical Co.
Leitz, Inc.
Perkin-Elmer Corp.
Zeiss, Inc., Carl

FILTERS, Optical
Akatos, Inc.
Bausch & Lomb Optical
Electronic Laboratory
Fecker, J. W.
Fish-Schurman
General Scientific Corp.
Goerz Amer. Optical Co.
Klett Mfg. Co.
Mico Instrument Co.
Pfaltz & Bauer, Inc.
Rubicon Co.
Testrite Instrument Co.
Triumph Mfg. Co.
United Cinephone Corp.

FINDERS, VALVE BOX Geophysical Inst. Co.

FIRE CONTROL INSTRUMENTS, MILITARY & NAVAL
Elec. Indicator Co.
Fecker, J. W.
Kern Co.
Kollmorgen Optical Co.
Unertl Opt. Co.
United Cinephone Corp.

FIRING DISKS
Veritas Firing System

FLASH POINT TESTERS (See Testers, Flash Point)

FLASHERS, Neon Tube
Automatic Elec. Mfg. Co.
Bacharach Industrial Inst.
Betts & Betts
Paragon Electric Co.
Sangamo Electric Co.

FLATNESS TESTERS (See Testers, Flatness, Light Wave)

FLATS, OPTICAL
Am. Telescope Labs.
Baird Associates
Bausch & Lomb Optical
Clark & Sons
Ednal Co.
Fecker, J. W.
Ferner Co.
Fish-Schurman Co.
Fuess, Inc.
Gaertner Scientific Corp.
Goerz Amer. Optical Co.
Kollmorgen Optical Co.
Master Optical Co.
Mico Instrument Co.
Miller Corp., William
Perkin-Elmer Corp.
Ruska & Co.
Scherr Co., Inc., George
(Cont'd)

FLATS, OPTICAL (Cont'd)
Simpson Optical
Spencer Lens
Tinsley Laboratories
Unertl, John
Van Keuren Co.
Wilder, R. S.
Woermann-Schuchhardt
Zeiss, Inc., Carl

FLATS, OPTICAL, Fused Quartz
Bausch & Lomb Opt.
Thermal Syndicate Ltd.

"FLOW"

(Flowmeters measure primarily RATE of flow. For positive or "quantity" fluid meters, see the numerous classes under "Meters")

FLOWMETERS, AIR (See Flowmeters, Gas)

FLOWMETERS, AREA Cone & Disk Type
Cochrane Corp.
Commercial Engg. Labs.
Fischer & Porter
Friez & Sons
National Meter Co.

FLOWMETERS, AREA Cylinder & Piston Type
American Inst. Co.
Bowser & Co.
Brown Inst. Co.
Fischer & Porter
National Meter Co.
New Jersey Meter Co.

FLOWMETERS, AREA Free Float Type
Am. Gas Furnace Co.
D'Este Co.
Fischer & Porter
Fish-Schurman Corp.
Hoke, Inc.
Schutte & Koerting Co.

FLOWMETERS, AREA Orifice & Plug Type
American Meter Co.
Bacharach Industrial Inst.
Brown Inst. Co.
Cochrane Corp.
Fischer & Porter
Mason-Neilan Regulator
Republic Flow Meters
Taylor Inst. Cos.
Trimount Instrument

FLOWMETERS, BLAST (See Flowmeters, Gas)

For addresses, see pages 82-91

BUILDERS

RECORDING·INDICATING·CONTROLLING

Instruments

for

METERING FLOW

Liquid Level • Weight

VENTURI

Builders Venturi Meter is equally respected in boiler rooms, water works, and sewage disposal plants everywhere. For the super-accuracy required by central stations, each Type M is adjusted to match exactly its University-calibrated Venturi Tube. Write for Bulletin 324.

CHRONOFLO

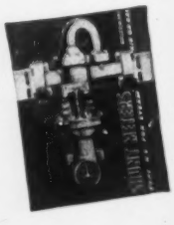
Builders Chronoflo Telemeter brings measurements of flow, level, pressure, temperature, and weight from any distance to centrally located indicating and recording instruments. The Chronoflo time impulse Meter has more than fulfilled its promise. Write for Bulletin 320A.

FLO-WATCH

An attractive flow meter as accurate as it is good-looking. This recording, indicating, and totalizing meter is designed and priced to allow wide use throughout the plant. Equally serviceable with Venturi Tube, Flow Nozzle or Orifice Plate. Write for Bulletin 318A.

SHUNT

Again and again, hundreds of firms have purchased Builders Shunt Meters to measure steam, air, or gas that they sell to customers or distribute to various departments. Low price and accuracy are but two of the many Type KS advantages. Write for Bulletin 307.



BUILDERS - PROVIDENCE, INC.

(DIVISION OF BUILDERS IRON FOUNDRY)

44 CODDING STREET PROVIDENCE, R. I.

FLOWMETERS, GAS
Ace Glass, Inc.
American Gas Furnace
American Inst. Co.
American Meter Co.
Bacharach Industrial Inst.
Bailey Meter Co.
Bowser & Co.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Clark Blast Meter
Cochrane Corp.
Commercial Engg. Labs.
D'Este Co.
Detroit Air Meter Co.
Eclipse Aviation
Elec. Indicator Corp.
Fischer & Porter
Fish-Schurman Co.
Foxboro Co.
Friez & Sons
Gas Appliance Specialties
Henszey Co.
Hoke, Inc.
Ill. Testing Labs.
International Filter Co.
Kollsman Inst. Co.
Lambert Meter Co.
Leeds & Northrup
Leupold, Volpel & Co.
Mason-Neilan Regulator
Meriam Co.
Morey & Jones, Ltd.
National Meter Co.
New Jersey Meter Co.
Pioneer Instrument
Republic Flow Meters
Ring Balance Co.
Schutte & Koerting Co.
Scientific Glass Apparatus
Selas Company
Simplex Valve & Meter
Spray Engg. Co.
Superior Meter Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trimount Instrument
Victor Equipment Co.

FLOWMETERS, LIQUID
(See Flowmeters, Gas)

FLOWMETERS, Open-Stream
Bristol Co.
Builders-Providence
Cochrane Corp.
Leupold, Volpel & Co.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Republic Flow Meters
Scientific Inst. Co. Calif.
Simplex Valve & Meter

FLOWMETERS, Orifice, and Nozzle
Ace Glass Inc.
American Meter Co.
Askania Regulator Co.
Bacharach Industrial Inst.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Cochrane Corp.
Commercial Engg. Labs
Corning Glass Works
Eimer & Amend
Fischer & Porter
Foxboro Co.
Hoke, Inc.
Lambert Meter Co., Inc.
Leeds & Northrup Co.
Leupold, Volpel & Co.
Mason-Neilan Regulator
Meriam Co.
Morey & Jones, Ltd.
Permutit Co.
Pgh. Equitable Meter
Republic Flow Meters
Ring Balance Co.
Ruska & Co., Inc.
Scientific Glass Apparatus
Scientific Inst. Co.
Simplex Valve & Meter
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trimount Instrument

FLOWMETERS, Pitot Tube
Am. Blower Corp.
American Meter Co.
Askania Regulator Co.
Bacharach Industrial Inst.
Bailey Meter Co.
Bristol Co.
Builders-Providence
Cambridge Inst. Co.
Central Scientific Co.
Cochrane Corp.
Defender Automatic Reg.
Detroit Air Meter Co.
Foxboro Co.
Friez & Sons
Fuess, Inc.
Kollsman Inst. Co.
Leupold, Volpel & Co.
Meriam Co.
Morey & Jones, Ltd.
Pitometer Log Corp.
Precision Therm. & Inst.
Refinery Supply Co.
Republic Flow Meters
Ring Balance Co.
Simplex Valve & Meter
Taylor Inst. Cos.
Trimount Instrument

FLOWMETERS, Steam
Am. Dist. Steam Co.
American Meter Co.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Cochrane Corp.
Fischer & Porter
Foxboro Co.
Leeds & Northrup Co.
Mason-Neilan Regulator
Meriam Co.
Morey & Jones, Ltd.
Republic Flow Meters
Ring Balance Co.
Simplex Valve & Meter
Tagliabue Mfg. Co.
Taylor Inst. Cos.

FLOWMETERS, Vane
Autocall Co.
Detroit Air Meter Co.
Friez & Sons
Ill. Testing Labs.
Mason-Neilan Regulator
Simplex Valve & Meter

FLOWMETERS, Venturi Type
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Cochrane Corp.
Foxboro Co.
International Filter Co.
Leupold, Volpel & Co.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Republic Flow Meters
Ring Balance Co.
Simplex Valve & Meter
Taylor Inst. Cos.

FLOWMETERS, Weir
Bailey Meter Co.
Binckley, G. S.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Cochrane Corp.
Elec. Indicator Corp.
Foxboro Co.
Gurley, W. & L. E.
Leupold, Volpel & Co.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Simplex Valve & Meter
Taylor Inst. Cos.

FLUE GAS ANALYZERS
(See Gas Analyzers, Flue Gas)

FLUID METERS, GAS
(See Gas Meters)

For addresses, see pages 82-91

FISCHER & PORTER

Hevi-Duty Rotameter

FOR CORROSIVE FLUIDS

The Hevi-Duty rotameter is adaptable for measuring flow rates of a wide variety of corrosive fluids. It may be constructed of such corrosion-resistant materials as stainless steel, hard lead, rubber, ceramics, Duriron, Hastelloy, Haveg, Karbate and many others.

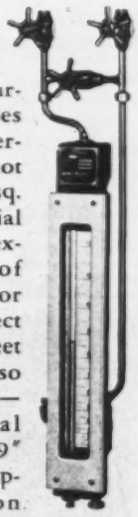
Its sturdy construction enables the meter to take full piping load and permits installation in the pipe line at the most convenient point.

Send for Bulletin 20-B

FISCHER & PORTER CO.
23 COUNTY LINE ROAD
HATBORO PENNSYLVANIA

FLOW METERS

● The Type H illustrated is an extremely accurate indicating instrument for measuring the flows of gases or liquids when operating pressures do not exceed 250 lbs. per sq. in. and the differential pressure does not exceed 160 inches of water pressure. Wall or Panel Mounting. Direct reading scales to meet any requirement. Also Inclined Tube types—for low differential ranges of 25″ or 49″ of water. Fully descriptive catalog sent on request.



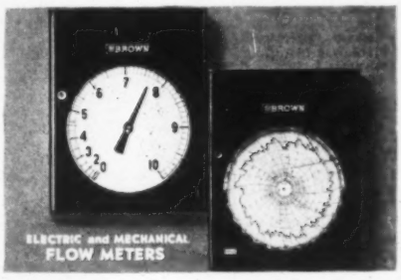
THE MERIAM CO.
CLEVELAND, OHIO

Manometers, Meters, and Gauges for the accurate measurement of Pressures, Vacuums and Flows of Liquids and Gases.

FOXBORO METERS

A complete line of Flow Meters for steam, gas; air, oil, water, acids and other fluids. Orifice type simple in design, powerful, with a straight-line motion that assures permanent calibration, long life. Can be furnished with integrator to give total flow. Recorders may also be equipped with pressure, temperature and integrator pens.

Write for Bulletin Nos. 200-5 and 692. The Foxboro Company, 46 Neponset Avenue, Foxboro, Mass., U. S. A.



For Controlling, Recording, Totalizing and Indicating the Flow of Fluids such as Steam, Water, Gas, Oil, etc.

Brown Flow Meters are available in two types, the Electric type and Mechanical type.

ELECTRIC TYPE: Complete equipment consists of three units, the orifice plate, manometer and instrument. Instrument can be located at a remote point from the orifice and manometer (point of flow measurement).

Because of this flexibility, it is particularly adaptable for applications where instruments are to be remotely located. Write for Catalog 2007.

MECHANICAL TYPE: Complete equipment consists of two units, the orifice plate and the instrument. The meter body is integral with the instrument. Readings are transmitted mechanically from meter body to instrument. Write for Catalog 2204.

THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4482 Wayne Avenue, Philadelphia, Pa.

BROWN FLOW METERS
AND
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS
To Measure and Control is to Economize

BAILEY
Fluid Meters
For STEAM · LIQUIDS · GASES

● Bailey Fluid Meters are designed to indicate, record and integrate the flow of steam, liquids, or gases under practically any pressure or temperature condition.

A great variety of indicating, recording and integrating combinations are available for use with four distinct types of flow mechanisms.

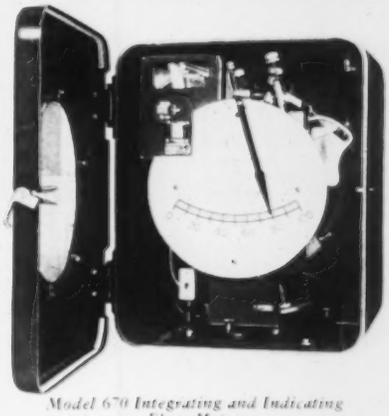
This large variety of possible combinations enables the flow meter engineer to specify equipment which is pre-eminently suited to any flow measuring application.

When it is desired to place indicators, recorders and integrators at a considerable distance from the primary element, Bailey Synchro-Meters are available to provide electric transmission.

For detailed information consult Sweet's Engineering Catalogs or request a copy of bulletin No. 301.

BAILEY METER COMPANY
1041 IVANHOE ROAD · CLEVELAND, O.
Bailey Meter Company Ltd., Montreal, Canada

FLOW METERS FOR ALL PURPOSES



Model 670 Integrating and Indicating Flow Meter

★

HIGH PRESSURE METERS
Standard Differential Range—20″ to 150″ Water

LOW PRESSURE METERS
Standard Differential Range—1″ to 8″ of Water

★

Range Change Can be Made Without Taking Meter Out of Service

★

Write for Bulletin 410

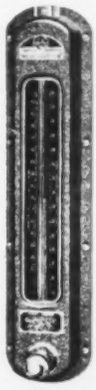
RING BALANCE INSTRUMENT CO.
740 N. FRANKLIN ST. CHICAGO, ILL.

LIQUID MEASUREMENT
with the
KING-GAGE
(formerly Industrial K-S Telegage)

A simple hydrostatic balance — no floats, gears, diaphragms or moving parts — rugged construction — simple design — accurate measurement of Laboratory standard for commercial use. Distant reading, for indicating contents of pressure or vented storage tanks in any unit of Depth, Volume or Weight.

Approved by Underwriters' Laboratories

KING ENGINEERING CORP.
ANN ARBOR, MICH.



MJL
FEATURES
BELLOWS ACTUATED
FLOWMETERS
and
LIQUID LEVEL
GAUGES
of the
DIFFERENTIAL
PRESSURE TYPE

Other Instruments Manufactured Include

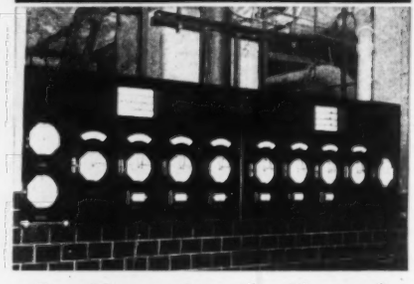
The NOZZLE PRESSURATER
FOR FIRE ENGINES

MANOMETERS
HIGH PRES. TYPE

Write for Details

MOREY & JONES, LTD.
922 So. HEMLOCK ST.
LOS ANGELES, CALIF.

FLOW METERS



For Measuring the Flow of Steam-Water-Gas-Air-Oil

WORKING PRESSURES
Republic meters are available for all working pressures up to 5000 lb. per sq. in.

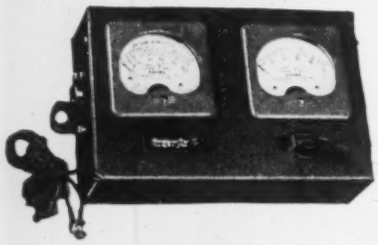
RANGE EASILY CHANGED
The range of a Republic meter can be easily and quickly changed by merely changing the range tube.

READING INSTRUMENTS
The Republic indicator, recorder and integrator operate independently of each other and can be supplied separately or in combination. They are remote reading.

EASILY READ
The indicator scale and the recorder chart all have uniform graduations and are direct reading. The integrator has a large cyclometer type dial.

WRITE FOR DATA BOOK No. 701

REPUBLIC FLOW METERS CO.
2249 DIVERSEY PKWY., CHICAGO, ILLINOIS



TRU-VAC
VACUUM GAUGES
(PIRANI TYPE)

Shown at left is meter box of our model No. 6 gauge.

This gauge successfully used by many of America's foremost manufacturers.

Send for circular on our new low priced D.C. operated gauge.

CONTINENTAL ELECTRIC CO.
GENEVA, ILLINOIS

FLUID METERS, LIQUID (See Meters, Liquid)

FLUID METERS, QUANTITY (See Gas Meters; Meters, Current; Meters, Liquid)

FLUORESCENT CHEMICALS
Central Scientific Co.
Pfaltz & Bauer, Inc.
Patterson Screen Co.
Laboratory Specialties

FLUORESCENT MERCURY VAPOR TUBES EMITTING WHITE LIGHT (See Light Sources)

FLUOROSCOPES
General Electric X-Ray
Patterson Screen Co.
Westinghouse X-Ray Co.

FLUXMETERS
Annis Co.
Cambridge Inst. Co.
Central Scientific Co.
General Elec. Co.
Leeds & Northrup Co.
Rawson Electrical Inst.
Rubicon Co.
Sensitive Research Inst.

FOLDING ENDURANCE TESTERS (PAPER) (See Testers, Folding Endurance)

FOOT BLOCKS
Ford Motor Co.

FOOT CANDLE METERS
Central Scientific Co.
De Jur-Amsco Corp.
General Elec. Co.
G-M Labs.
Pfaltz & Bauer, Inc.
Photovolt Corp.
United Cinephone Corp.
Weston Elec. Inst. Corp.

FOREWARN DETECTOR, for locating hidden weapons (See Detectors, Metal)

FORKS, Synchronization
Elec. Tachometer Corp.
Gaertner Scientific Corp.
Riverbank Laboratories

FORKS, Tuning
Clay-Adams Co.
Hathaway Instrument

FORKS, Tuning, Electrically Driven
American Inst. Co.
Cambridge Inst. Co.
Central Scientific Co.
Chicago Apparatus Co.
Elec. Tachometer Corp.
Engineering Labs., Inc.
Gaertner Scientific Corp.
General Radio Co.
Hathaway Inst. Co.
Riverbank Laboratories
Welch Mfg. Co.

FORKS, Vacuum Driven
Cambridge Inst. Co.
Gaertner Scientific Corp.
Riverbank Laboratories

FRACTIONAL HORSEPOWER MOTORS (See Motors, Fractional Horsepower)

FREENESS TESTERS (See Testers, Freeness)

FREQUENCY METERS, Controlling
Doolittle Radio
General Elec. Co.
Leeds & Northrup Co.

FREQUENCY Meters, Electronic
De Jur-Amsco Corp.
General Radio Co.
RCA Manufacturing Co.

FREQUENCY METERS, Indicating
General Elec. Co.
General Radio Co.
Hathaway Instrument
Hickok Elec. Inst. Co.
J-B-T Instruments
Leeds & Northrup Co.
RCA Manufacturing Co.
Roller-Smith Co.
Sensitive Research Inst.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

FREQUENCY METERS, Recording
Bristol Co.
Esterline-Angus Co.
General Elec. Co.
Leeds & Northrup Co.
Roller-Smith Co.
Warren Telechron Co.
Westinghouse Elec. & Mfg.

FREQUENCY METERS, Standards
Bliley Electric Co.
Doolittle Radio
Ferris Inst. Corp.
Hathaway Instrument
Millen Mfg. Co.
RCA Manufacturing Co.

FREQUENCY METERS, Vibrating Reed
Biddle Co., Jas. G.

FRITTED GLASS F... TERS & APPARA...
Central Scientific Co.
Fischer & Porter
Fish-Schurman Co.
Pfaltz & Bauer, Inc.

FUEL ANALYSIS APPARATUS
Burrell Tech. Supply
Central Scientific Co.
Eimer & Amend
Machlett & Son
Parr Instrument Co.
Precision Scientific Co.
Sargent & Co.
Tagliabue Mfg. Co.

FUEL FLOW INDICATORS
Askania Regulator Co.
Autocall Co.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Commercial Eng. Labs.
Eclipse Aviation
Fischer & Porter
Foxboro Co.
Mason-Neilan Regulator
National Airoil Burner
Pioneer Instrument
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Victor Equipment Co.

FURNACE CONTROL SYSTEMS (See Controllers, Automatic)

FURNITURE, LABORATORY
Hamilton Mfg. Co.
Kewaunee Mfg. Co.
Kimball Co., W. W.
Laboratory Const. Co.
Laboratory Furniture Co.
Moline Furniture Works
Sheldon & Co.
Sjostrom Co.
Southern Desk Co.
Welch Mfg. Co.

FUSES, INSTRUMENT
Littelfuse Labs.
Meter Devices Co.

GAGE BLOCKS
Ford Motor Co.
Illinois Tool Works
Pratt & Whitney
Scherr Co., George
Standard Gage Co.
Van Keuren Co.

GAGE GLASS ILLUMINATORS
Wright-Austin Co.

GAGE TESTERS, Deadweight
American Inst. Co.
Amthor Testing Inst. Co.
Ashton Valve Co.
Crosby Steam Gage Co.
Manning, Maxwell & Moore
Olsen Testing Machine
Pioneer Instrument
Refinery Supply Co.
Star Brass Mfg. Co.

GAGE TESTERS, Fluid-scale
Crosby Steam Gage Co.

GAGE TESTERS, Liquid-column
Manning, Maxwell & Moore
Pioneer Instrument

GAGES (See also object of Measurement and control)

GAGES, Absolute Pressure
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Clapp Instrument
Foxboro Co.
Kollsman Inst. Co.
Manning, Maxwell & Moore
Mason-Neilan Regulator
Moeller Instrument Co.
Pioneer Instrument
Precision Therm.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Uehling Instrument Co.
United States Gauge Co.
Victor Equipment Co.

GAGES, Air
Ashton Valve Co.
Bailey Meter Co.
Bastian-Blessing Co.
Bristol Co.
Clapp Instrument
Detroit Air Meter Co.
Electric Auto-Lite
Foxboro Co.
Friez & Sons
Lambert Meter Co. Inc.
Manning, Maxwell & Moore
Marsh Corp.
Mason-Neilan Regulator
Rochester Mfg. Co.
Star Brass Mfg.
Tagliabue Mfg. Co.
Trerice Co.
Uehling Inst. Co.
U. S. Gage Co.
Victor Equipment Co.

For addresses, see pages 82-91

GAGES, Alarm
Ashton Valve Co.
Bailey Meter Co.
Bristol Co.
Crosby Steam Gage
Foxboro Co.
Manning, Maxwell & Moore
Marsh Corp.
Mason-Neilan Regulator
Precision Therm. & Inst.
Star Brass Mfg.
Trerice Co.
U. S. Gage Co.

GAGES, Amplifying
Coats Mach. Tool Co.
Comtor Co.
Federal Prod. Corp.
Precision Gage & Tool
Saxl Instr. Co.
United Cinephone Corp.

GAGES, Automatic Sorting
Electric Sorting Machine
Hathaway Instrument
Heyman Co.
Instrument Specialties Co.
Rowe Radio Research

GAGES, Bore
Brown & Sharpe
Comtor Co.
Federal Prod. Corp.
Pratt & Whitney
Scherr Co.
Sheffield Gage

GAGES, Bourdon
Ashton Valve Co.
Bailey Meter Co.
Baldwin-Southwark Corp.
Bastian-Blessing Co.
Belfield Co.
Bristol Co.
Brown Inst. Co.
Clapp Instrument
Crosby Steam Gage
Dickson Co.
Electric Auto-Lite
Foxboro Co.
Hays Corp.
Heise Bourdon Tube
Hoke, Inc.
Improved Gauge Mfg.
Manning, Maxwell & Moore
Marsh Corp.
Mason-Neilan Regulator
Merrow Corp.
Pioneer Instrument
Republic Flow Meters
Star Brass Mfg. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.
United States Gauge Co.

GAGES, Caliper (Dial)
Brown & Sharpe
Federal Prod. Corp.
Glogau & Co.
Starrett Co.

GAGES, Center
Lufkin Rule Co.
Millers Falls Co.
Starrett Co.
Union Tool Co.

GAGES, Comparator
Ames Co., B. C.
Coats Mach. Tool Co.
Comtor Co.
Federal Prod. Corp.
Gaertner Scientific Corp.
General Engg. & Model
Hathaway Instrument
Instrument Specialties Co.
Jones & Lamson Machine
Pratt & Whitney
Precision Gage & Tool
Saxl Inst. Co.
Scherr Co.
Sheffield Gage
United Cinephone Corp.

GAGES, Compression
Bacharach Indus. Inst.
G. M. Co. Mfg.
Riehle Div.
Saxl Inst. Co.
Toledo Scale Co.
United States Gauge Co.

GAGES, Contour see **Gages, Profile**

GAGES, Cylinder
Ames Co., B. C.
Coats Mach. Tool
Comtor Co.
Federal Prod. Corp.
Lufkin Rule Co.
Pratt & Whitney
Starrett Co.
United Cinephone
Victor Equipment

GAGES, Depth, Linear
Ames Co., B. C.
Brown & Sharpe
Glogau & Co.
Instrument Specialties
Lincoln Park Tool & Gage
Lufkin Rule Co.
Park Sales
Pratt & Whitney
R & M Mfg. Co.
Starrett Co.
Union Tool Co.

GAGES, Depth, Navigational
Geophysical Inst. Co.

GAGES, Dial, Machinists'
Ames Co., B. C.
Brown & Sharpe
Chicago Dial Ind.
Federal Prod. Corp.
Ferner Co.
Genales, Andrew
General Engg. & Model
Randall, Frank E.
Starrett Co.
Waltham Dial Gage

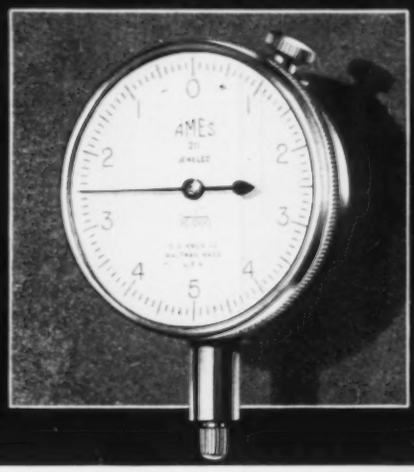
GAGES, Differential Pressure
American Meter Co.
Bacharach Industrial Inst.
Bailey Meter Co.
Boiler Room Equip.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Crosby Steam Gage
Defender Automatic Reg.
Detroit Air Meter Co.
Dwyer Mfg. Co.
Ellison Draft Gage Co.
Foxboro Co.
Friez & Sons
Fuess, Inc.
Gas Appliance Specialties
Hays Corp.
Kollsman Instrument
Lambert Meter Co.
Leupold, Volpel & Co.
Manning, Maxwell & Moore
Mason-Neilan Regulator
Meriam Co.
Moeller Instrument
Moore Products Co.
Morey & Jones, Ltd.
Pioneer Instrument
Pitometer Log Corp.
Precision Therm.
Preferred Utilities Mfg.
Republic Flow Meters
Scientific Glass Apparatus
Scientific Inst. Co.
Simplex Valve & Meter
Tagliabue Mfg. Co.
Taylor Inst. Co.
Trimount Instrument
Uehling Instrument Co.
U. S. Gauge Co.

GAGES, Draft (See Gages, Differential Pressure)

GAGES, Drill Grinding
Lufkin Rule Co.
Morse Twist Drill
Starrett Co.

GAGES, Feeler
Improved Gauge Mfg.
Lufkin Rule Co.
Millers Falls Co.
Starrett Co.
Union Tool Co.
Van Keuren Co.

AMES Hundred Series DIAL INDICATORS



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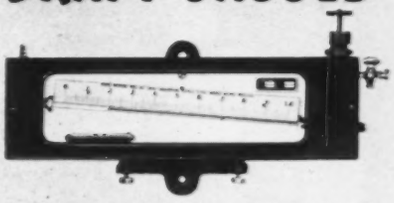

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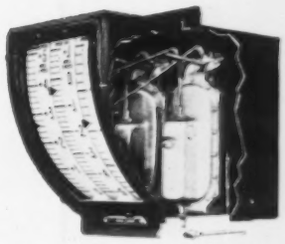

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Bailey Meter Company Ltd., Montreal, Canada

For addresses, see pages 82-91

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Bristol Co.
Connelly Iron Sponge
Detroit Air Meter
Dickson Co.
Foxboro Co.
Gas Appliance Specialties
Lambert Meter Co.
Mason-Neilan Regulator
Rochester Mfg. Co.
Specialty Glass Co.
Superior Meter Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Victor Equipment

GAGES, Grinding
Ames Co., B. C.
Brown & Sharpe
Comtor Co.
Federal Prod. Corp.
Lufkin Rule Co.

GAGES, Height
Brown & Sharpe
Ford Motor Co.
General Engg. & Model
Lufkin Rule Co.
Scherr Co.
Starrett Co.

GAGES, Hook
Gurley, W. & L. E.
Leupold, Volpel & Co.
Scientific Inst. (Calif.)
White Co. Inc.

GAGES, Hydrostatic (See Gages, Liquid Level, Indicating)

GAGES, Internal Dial
Coats Mach. Tool
Comtor Co.
Federal Prod. Corp.
Gen. Engg. & Model Wks.
Scherr Co.

GAGES, Limit
Ford Motor Co.
General Elec. Co.
Gen. Engg. & Model Wks.
Greenfield Tap & Die
M-G Gage Corp.
Pratt & Whitney
Sheffield Gage
United Cinephone
Van Keuren Co.

GAGES, Liquid Level, Indicating
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Ashton Valve Co.
Autocall Co.
Bacharach Industrial Inst.
Bailey Meter Co.
Bastian-Blessing
Belfield Co.
Bin-Dicator Co.
Boston Auto Gage
Bowser & Co.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Burt Scientific Labs.
Certified Gauge
Clapp Instrument
Cochrane Corp.
Crosby Steam Gage
Davis Reg. Co.
Defender Automatic Reg.
Dickson Co.
Electric Auto-Lite
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Elec. Tachometer Corp.
Fisher Governor Co.
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Frick Co.
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General Elec. Co.
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Leupold, Volpel
Liquidometer Co.
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Marsh Corp.
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McAlear Mfg. Co.
McNeill Engr. Equip.
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Morey & Jones, Ltd.
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Natural Gas Equipment
Paragon Electric
Penberthy Injector Co.
Petrometer Corp.
Pioneer Instrument Co.
Pneumercator Co., Inc.
Precision Therm.
Preferred Utilities Mfg.
Reliance Gauge Column
Republic Flow Meters
Rochester Mfg. Co.
Schutte & Koerting Co.
Simplex Valve & Meter
Star Brass Mfg.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trimount Instrument
Uehling Instrument Co.
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Westinghouse Elec. & Mfg.
Wheelco Inst. Co.
Williams Gauge Co.
Wright-Austin Co.
Yarnell-Waring Co.

GAGES, Liquid Level, Recording (See Gages, Liquid Level, Indicating)

GAGES, Loss of Head
Bailey Meter Co.
Bristol Co.
Builders-Providence
Foxboro Co.
International Filter Co.
Morey & Jones, Ltd.
Taylor Inst. Cos.

GAGES, Mercury
Amthor Testing Mach.
Bacharach Industrial Inst.
Bailey Meter Co.
Builders-Providence
Central Scientific
Connelly Iron Sponge
Defender Automatic Reg.
Dubrovin, John
Dwyer Mfg. Co.
Eimer & Amend
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Meriam Co.
Moeller Instrument
Morey & Jones
Precision Therm.
Refinery Supply Co.
Scientific Glass Apparatus
Simplex Valve & Meter
Specialty Glass Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.
Trimount Instrument
Uehling Instrument Co.

GAGES, Micrometer
Ames Co., B. C.
Amthor Testing Mach.
Brown & Sharpe
Central Scientific Co.
Coats Mach. Tool Co.
Gaertner Scientific Corp.
Haines Gauge Co.
Instrument Specialties Co.
Lufkin Rule Co.
Millers Falls Co.
Precision Therm. & Inst.
Scherr Co.
Van Keuren Co.
Zeiss, Inc., Carl

GAGES, Oil (See Gages, Liquid Level)

GAGES, Optical
Bausch & Lomb
Chicago Dial Ind. Co.
Clark & Sons
Fecker, J. W.
Gaertner Scientific Corp.
Jarrell-Ash Co.
Jones & Lamson Machine
Ruska & Co.
Scherr Co.
United Cinephone Corp.
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GAGES, Paint Film
General Elec. Co.
Hathaway Inst. Co.
Instrument Specialties Co.
Munsell Color Co.
Saxl Inst. Co.

GAGES, Paper Thickness (See Gages, Thickness)

GAGES, Piston Ring
Littelfuse Inc.
Wilkening Mfg. Co.

GAGES, Pitch Diameter
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Federal Prod. Corp.
Greenfield Tap & Die
Lufkin Rule Co.
Pratt & Whitney
Scherr Co., Inc.
Union Tool Co.
Van Keuren Co.
West & Dodge Thr. Gage

GAGES, Plug
Brown & Sharpe
Clark, Jr., Pneumatic
Ford Motor Co.
Greenfield Tap & Die
Lincoln Park Tool
Morse Twist Drill
Pratt & Whitney
Precision Gage & Tool
R & M Mfg. Co.
Sheffield Gage
Troy Tool & Gage
West & Dodge Thr. Gage

GAGES, Pneumatic Tank
Bacharach Industrial
Mason-Neilan Regulator
Pneumercator Co.
Rochester Mfg. Co.
Uehling Inst. Co.

GAGES, Precision Measuring
Ames Co., B. C.
Brown & Sharpe
Comtor Co.
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Ferner Co.
Ford Motor Co.
Gaertner Scientific Corp.
Instrument Specialties
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Pratt & Whitney
Rieker Instrument Co.
Scherr Co., Inc.
Sheffield Gage
Starrett Co.
Thwing-Albert Inst. Co.
Van Keuren Co.
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GAGES, Pressure, Indicating
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American Meter Co.
Ashton Valve Co.
Bacharach Industrial Inst.
Bailey Meter Co.
Baird Associates
Baldwin-Southwark Corp.
Bastian-Blessing
Belfield Co.
Boekel & Co.
Bristol Co.
Brown Inst. Co.
Brush Development Co.
Builders-Providence
Central Scientific Co.
Certified Gauge
Clapp Instrument
Clark Blast Meter
Commercial Eng. Labs.
Consol. Ashcroft Hancock
Continental Elec. Co.
Crosby Steam Gage
Defender Automatic Reg.
Dickson Co.
Dubrovin, John
Edison Electrical Controls
Eimer & Amend
Electric Auto-Lite
Esterline-Angus Co.
Fisher Scientific Co.
Foxboro Co.
Fredericks, George
Friez & Sons
Gas Appliance Specialties
General Elec. Co.
Gotham Inst.
Green, Henry J.
Hays Corp.
Heise Bourdon Tube
Kurman Electric
Logansport Machine
Marsh Corp.
Mason-Neilan Regulator
Mercoid Corp.
Meriam Co.
Moeller Instrument Co.
Parks Co., Harry S.
Pioneer Instrument
Pittsburgh Equitable Met.
Plumb Co., Inc.
Precision Gage & Tool
Precision Therm.
Preferred Utilities Mfg.
RCA Manufacturing Co.
Refinery Supply Co.
Republic Flow Meters
Rochester Mfg. Co.
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Star Brass Mfg. Co.
Stokes Machine Co.
Superior Meter Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.
Trimount Instrument
Uehling Instrument Co.
United Cinephone Corp.
U. S. Gauge Co.
Victor Equipment Co.
Wagner & Son, Carl H.
Welch Mfg. Co.
Wilcus Manufacturing

GAGES, Pressure—Recording (See Gages, Pressure, Indicating)

GAGES, Pressure Temperature (See Gages, Pressure Indicating)

GAGES, Pressure, Tire
Air Balance Inst. Co.
U. S. Gauge Co.

GAGES, Pressure & Vacuum (See Gages, Pressure Indicating)

GAGES, Profile
Lincoln Park Tool
Pratt & Whitney
Precision Gage & Tool
R & M Mfg. Co.
Sheffield Gage
Stockton Profile Gauge
United Cinephone Corp.

GAGES, Radius
Lufkin Rule Co.
Starrett Co.
United Cinephone Corp.

GAGES, Rain (See Rain Gages)

GAGES, Rifle Bore
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Pratt & Whitney

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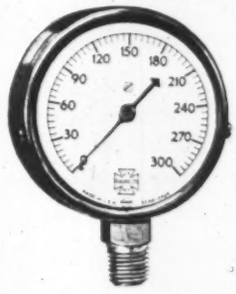

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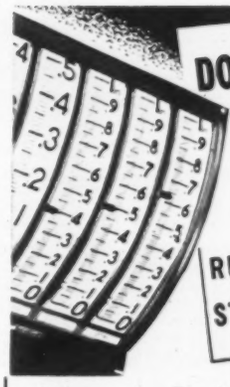

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PETROMETER is an instrument used to indicate the vertical depth of liquids in tanks located at any distance up to ¼ mile.

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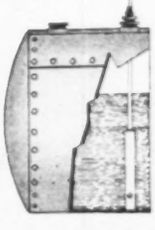

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Lincoln Park Tool
Morse Twist Drill
Pratt & Whitney
Precision Gage & Tool
R & M Mfg. Co.
Sheffield Gage
Troy Tool & Gage
West & Dodge Thread
Zeiss, Inc., Carl

GAGES, Screw Thread
Brown & Sharpe
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Greenfield Tap & Die
Lincoln Park Tool
Lufkin Rule Co.
Millers Falls Co.
Pratt & Whitney
Reed Small Tool Works
Sheffield Gage
Starrett Co.
Union Tool Co.
West & Dodge Thread
Zeiss, Inc., Carl

GAGES, Sliding
Pratt & Whitney
Van Keuren Co.

GAGES, Snap
Brown & Sharpe
Clark, Jr. Pneumatic Tool
Gen. Engg. & Model Wks.
Greenfield Tap & Die
Lincoln Park Tool
M-G Gage Corp.
Pratt & Whitney
Precision Gage & Tool
R & M Mfg. Co.
Scherr Co.
Sheffield Gage
Troy Tool & Gage

GAGES, Spline
Brown & Sharpe
Pratt & Whitney
Precision Gage & Tool
Sheffield Gage

GAGES, Star
Pratt & Whitney

GAGES, Strain
American Inst. Co.
Baldwin-Southwark
General Elec. Co.
Hathaway Inst. Co.
Metzger & Son
Miller Corp., Wm.
Olsen Testing Machine
Pratt & Whitney
Saxl Inst. Co.
Starrett Co.
Waugh Laboratories

GAGES, Surface
Ames Co., B. C.
Brown & Sharpe
Genales, Andrew
Federal Prod. Corp.
Lufkin Rule Co.
Millers Falls Co.
Saxl Inst. Co.
Starrett Co.
Zeiss, Inc., Carl

GAGES, Taper
Brown & Sharpe
Federal Prod. Corp.
Lincoln Park Tool
Precision Gage & Tool
Pratt & Whitney
R & M Mfg. Co.
Sheffield Gage
Starrett Co.

GAGES, Telescoping
Brown & Sharpe
Lufkin Rule Co.
Pacific Tool & Supply
Starrett Co.

GAGES, Thickness
American Askania Corp.
Ames Co., B. C.
Amthor Testing Inst. Co.
Brown & Sharpe
Federal Prod. Corp.
Ford Motor Co.
General Elec. Co.
Gen. Engg. & Model Wks.
Hathaway Inst. Co.
Ill. Testing Labs.
Instrument Specialties Co.
Lufkin Rule Co.
Magnetic Gauge Co.
Metzger & Son
Millers Falls Co.
Pratt & Whitney
Precision Gage & Tool
Precision Therm. & Inst.
Randall, Frank E.
R & M Mfg. Co.
Saxl Inst. Co.
Sheffield Gage
Speidel & Co.
Starrett Co.
Suter, Alfred
Thwing-Albert Inst. Co.
Union Tool Co.
Van Keuren Co.
Waltham Dial Gage

GAGES, Thickness, Magnetic
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Commercial Eng. Labs.
General Elec. Co.
Hathaway Inst. Co.
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Ballauf Mfg. Co.
Uehling Instrument Co.

GAGES, Torque
Martin Decker Corp.
Riehle Div.
Saxl Inst. Co.
Toledo Scale Co.

GAGES, Vacuum (See Gages, Pressure)

GAGES, Venturi (See Flow Meters, Venturi)

GAGES, Water Level (See Gages, Liquid Level)

GAGES, Wind
American Inst. Co.
Detroit Air Meter
Friez & Sons
Fuess, Inc.
Green, Henry J.
Kenyon Instrument Co
Rieker Inst. Co.
Taylor Inst. Cos.

GAGES, Wire Measuring
Ames Co., B. C.
Brown & Sharpe
Federal Prod. Corp.
Greenfield Tap & Die
Hathaway Inst. Co.
Instrument Specialties Co.
Pratt & Whitney
Starrett Co.

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Cambridge Inst. Co.
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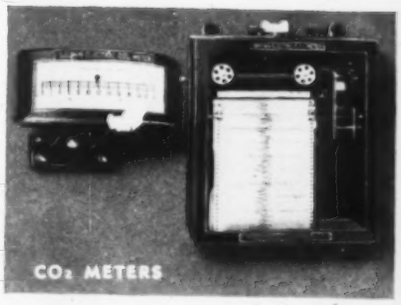

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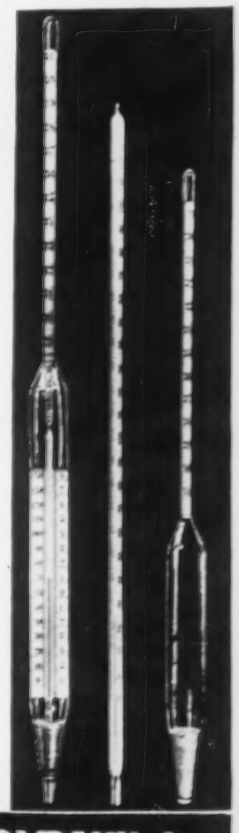

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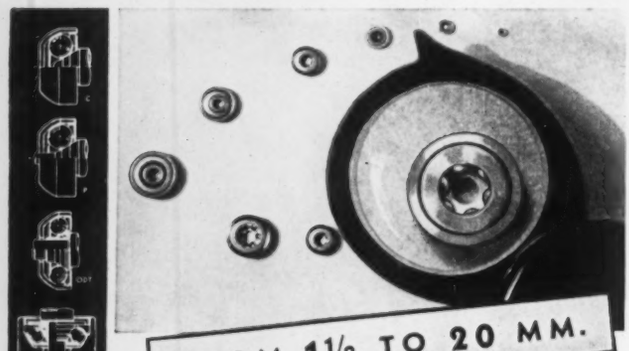

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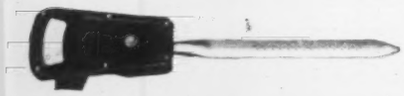

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METERS, Consumer's, Gas
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Lambert Meter Co., Inc.
Superior Meter Co.

METERS, Current, Air & Gas
American Meter Co.
Fischer & Porter
Mason-Neilan Regulator
Pgh. Equitable Meter Co.

METERS, Current, Liquid
American Meter Co.
Bowser & Co.
Builders-Providence
Eclipse Aviation
Fischer & Porter
(Cont'd)

METERS, Current, Liquid (Cont'd)
Keuffel & Esser Co.
Leupold, Volpel & Co.
Mason-Neilan Regulator
National Meter Co.
Neptune Meter Co.
Pgh. Equitable Meter Co.
Scientific Inst. Co. (Calif.)
Uehling Instrument Co.
Worthington-Gamon Meter

METERS, Decibel (See Sound Level Meters)

METERS, Demand, Electric
Electric Indicator Co.
Esterline-Angus Co.
General Elec. Co.
HD Elec. Co.
Landis & Gyr, Inc.
Lincoln Meter Co.
Sangamo Electric Co.
Therm-Electric Meter
Westinghouse Elec. & Mfg.

METERS, DEMAND, Gas
American Meter Co.
Bailey Meter Co.
Bendix Marine Products
Lambert Meter Co.
Mason-Neilan Regulator
Pgh. Equitable Meter Co.
Superior Meter Co.

METERS, Demand Limiting, Automatic
American Meter Co.
Annis Co.
Esterline-Angus Co.
General Elec. Co.
Landis & Gyr, Inc.
Lincoln Meter Co.
Mason-Neilan Regulator
Therm-Electric Meter
Westinghouse Elec. & Mfg.

METERS, Earth Current
Geophysical Inst. Co.
Heiland Research
Rawson Electrical Inst.
Sha'lcross Mfg. Co.

METERS, Electronic
Ballantine Labs.
Boonton Radio Corp.
Cambridge Inst. Co.
Clough-Brengle Co.
RCA Manufacturing Co.
Weston Elec. Inst. Co.

METERS, Flow (See Flowmeters)

METERS, Footage (See Counters, Footage)

METERS, Foot-candle (See Foot-candle Meters)

METERS, Frequency (See Frequency Meters)

METERS, Gas (See Gas Meters)

METERS, Gas, Dry Test
American Meter Co.
Lambert Meter Co.
Pgh. Equitable Meter Co.
Superior Meter Co.
Tagliabue Mfg. Co.

METERS, Gas, Integrating
American Meter Co.
Bailey Meter Co.
Brown Inst. Co.
Builders-Providence
Fischer & Porter
Foxboro Co.
Lambert Meter Co.
Mason-Neilan Regulator
Superior Meter Co.
Taylor Inst Cos.

METERS, Gas, Wet Test
American Meter Co.
Lambert Meter Co.
Superior Meter Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.

METERS, Gas, Station
American Meter Co.
Bowser & Co.
Pgh. Equitable Meter Co.

METERS, Gasoline (See Meters, Liquid)

METERS, High Pressure & High Pressure Distribution
Pgh. Equitable Meter Co.
Simplex Valve & Meter

METERS, Hydrogen Ion (See Hydrogen Ion Determination Instruments)

METERS, LIGHT (See Foot-candle Meters, Illumination Indicators and Recorders, Light Meters, etc.)

METERS, Liquid, Volumetric Types, Nutating Disk
Badger Meter Co.
National Meter Co.
Neptune Meter Co.
Pgh. Equitable Meter
Read Machinery Co.
Worthington Gamon

METERS, Liquid, Volumetric Types, Nutating Piston
Buffalo Meter Co.
National Meter Co.
Neptune Meter Co.
Worthington Gamon

METERS, Liquid, Volumetric Types, Oscillating Piston
Badger Meter Co.
Brodie Co., Inc.
Campion Labs.
National Meter Co.
Neptune Meter Co.
Worthington-Gamon Met

METERS, Liquid, Volumetric Types, Reciprocating Piston
Bowser & Co., Inc.
Ralph N. Brodie Co., Inc.
Pgh. Equitable Meter
Ruska & Co., Inc.
Worthington Gamon

METERS, Liquid, Volumetric, Rotary Piston
Badger Meter Co.
Bowser & Co., Inc.
Neptune Meter Co.
Pgh. Equitable Meter
Smith Meter Co.
Snarling, R. W.

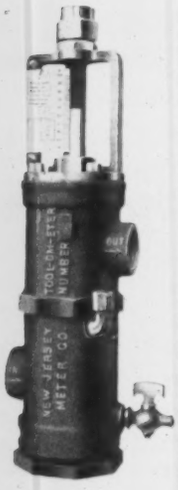
METERS, Liquid, Volumetric, Special for Extremely Low Flow
Bowser & Co., Inc.
Campion Labs.
Commercial Eng. Labs.
Fischer & Porter
Fluid Meters, Inc.
Gauthier, Donat A.
McCord Radiator & Mfg.
National Meter Co.

METERS, Liquid, Weighing
Richardson Scale Co.

METERS, Mileage
Gauthier, Donat A.
Houser Engg. & Mfg. Co.
Jaeger Watch Co.
Ohmer Register
Veeder-Root, Inc.

New Jersey Air Meters

TOOL-OM-ETER and DRILL-OM-ETER



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These meters are of the constant head, variable orifice type, simple, reliable, portable, only one moving part. Used on air and other gases at 1-300 lb.

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Model 656 Recording and Integrating Flow Meter

HIGH PRESSURE METERS
Standard Differential Range
20" to 150" of Water

LOW PRESSURE METERS
Standard Differential Range
1" to 8" of Water

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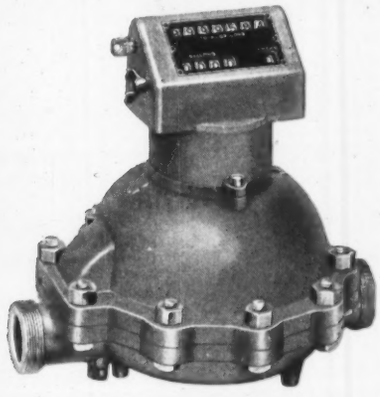

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Single nutating piston volumetric displacement type, with integrating registers.

For all liquids, including:

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- ALKALIS
- MOST ACIDS
- SOLVENTS
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For addresses, see pages 82-91

MOISTURE RECORDER .. *for use in* CONTINUOUS PROCESSING

GRAPHIC continuous records of Moisture Content of PAPER, CELLULOSE, FABRICS, and other hygroscopic materials manufactured by continuously moving processes are provided by the CAMBRIDGE MOISTURE RECORDER. This instrument operates upon a unique but fundamental principle. It can be calibrated in Relative Humidity or Percentage of Moisture.

STANDARD RANGES (R.H.) 10% to 50%, 25% to 50%, 20% to 80%.

For use in PAPER, TEXTILE *and* SIMILAR INDUSTRIES.

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Landis & Gyr, Inc.

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METERS, Orifice (See Flowmeters, Orifice)

METERS, Oxygen (See 1—Gas Analyzer; 2—Gas Meters)

METERS, Pitot Tube (See Flowmeters, Pitot Tube)

METERS, Positive Displacement (See Gas Meters, Positive and Liquid Meters, Volumetric)

METERS, Prepayment
American Meter Co.
Landis & Gyr, Inc.

METERS, Proportional
American Meter Co.
Bristol Co.
Fischer & Porter
Foxboro Co.
Mason-Neilan Regulator
National Meter Co.
Pgh. Equitable Meter Co.
Taylor Inst. Cos.

METERS, Reactive Component
Andrew, Victor J.
General Elec. Co.
Landis & Gyr, Inc.
RCA Manufacturing
Therm-Electric Meters Co.
Westinghouse Elec. & Mfg.
Weston Electrical Inst.

METERS, Rotary Displacement
Bowser & Co.
Neptune Meter Co.
Pgh. Equitable Meter Co.

METERS, Sewage
American Meter Co.
Bailey Meter Co.
Builders-Providence
Mason-Neilan Regulator
Morey & Jones, Ltd.
Pgh. Equitable Meter Co.
Simplex Valve & Meter
Taylor Inst. Cos.

METERS, Shunt
Builders-Providence
Columbia Elec. Mfg.
Daven Co.
Instrument Resistors
Rawson Electrical Inst.
Shallcross Mfg.
Wheelco Inst. Co.

METERS, Station
American Meter Co.

METERS, Steam (See Flowmeters, Steam)

METERS, Time
Campion Labs.
Cramer & Co., Inc.
Elec. Tachometer Corp.
General Elec. Co.
Industrial Timer Corp.
Jaeger Watch Co.
Luers, J. Milton
National Instrument Co.
Paragon Electric Co.
Rawson Electrical Inst.
Thompson Clock Co.
Warren Telechron Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

METERS, Ultraviolet Radiation
General Elec. Co.
Westinghouse Elec. & Mfg.

METERS, Venturi (See Flowmeters, Venturi)

METERS, V-notch (See Flowmeters, Weir)

METERS, Volumetric, Positive Displacement (See Gas Meters, Positive; see Meters, Liquid, Volumetric)

METERS, Water (See Liquid Meters, Volumetric; also Flowmeters, Liquid)

METERS, Watt-Hour
Duncan Electric
General Elec. Co.
Landis & Gyr, Inc.
Sangamo Electric Co.
Westinghouse Elec. & Mfg.

METERS, Weir (See Flowmeters, Weir)

MICROAMMETERS (See Ammeters, Microammeters)

MICRODENSITOMETERS
Akatos, Inc.
Dietert Co.
Gaertner Scientific Corp.
Jarrell-Ash Co.
Mico Instrument Co.

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Biddle Co., Jas. G.
Clough-Brengle Co.

MICRO-MANIPULATORS
Hoffman Co., S. O.
Industrial Instruments
Mico Instrument Co.
Zeiss, Inc., Carl

MICROMANOMETERS (See Manometers, Micro)

MICROMETERS, Calendar
Coats Mach. Tool Co.
Precision Therm.

MICROMETERS, Dial
Ames Co., B. C.
Amthor Test. Mach.
Coats Mach. Tool Co.
Exact Weight Scale
Federal Prod. Corp.
Gen. Engg. & Model Wks.
Glogau & Co.
Haines Gauge Co.
Park Sales
Randall, Frank E.
Scherr Co., Inc.
Starrett Co.
Waltham Dial Gage Co.

MICROMETERS, ELECTRONIC
Instrument Specialties

MICROMETERS, External
Instrument Specialties
Park Sales
Reed Small Tool Works
Slocomb Co., J. T.

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Gaertner Scientific Corp.

MICROMETERS, FLYING
Magnetic Gauge Co.

MICROMETERS, Internal
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Coats Mach. Tool Co.
Lufkin Rule Co.
Micro Products Co.
Millers Falls Co.
Pacific Tool & Supply
Reed Small Tool Works
Scherr Co., Inc.
Zeiss, Inc., Carl

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Bausch & Lomb Optical
Fish-Schurman Co.
Gaertner Scientific Corp.
Jarrell-Ash Co.
Keuffel & Esser Co.
Leitz, Inc.
Ruska & Co.
Scherr Co., Inc.
Spencer Lens Co.
Zeiss, Inc., Carl

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Sensitive Research Inst.

MICROPHONES
Amperite Co.
Brush Development
Kellogg Switchboard
Leich Electric
RCA Manufacturing
Shure Bros.
Sundt Engg.

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Model 151 0-125 Volts AC Flush type mounting **$10.00**

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This meter has double coil on each bobbin

Jewel model 53 0-10 amps DC surface type ..... **$ 2.00**

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Small circuit breakers, 20 to 30 amps AC ..... **$ 3.50**

110V DC motors, 50 watts ..... **$ 2.00**

W. E. Signal Corps type telephone plug **35c**

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Large variable condenser with set of coils calibrated 150 to 3000 meters. Sensitive telephone type relays of all types.

110V and 220V AC 5 digit electric counters **$7.50**

Many other laboratory parts and apparatus, write for list

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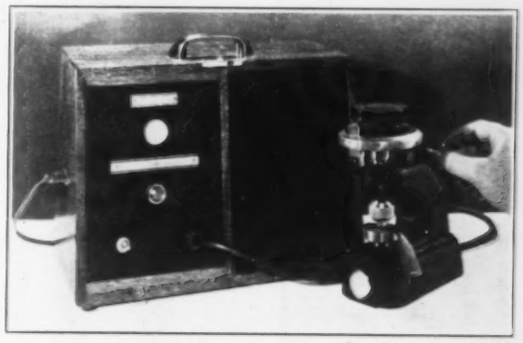
CARSON ELECTRONIC MICROMETER

For Precision Measurements without Pressure on soft, flexible or compressible materials.



Measures Thickness Accurately to .0001 Inch
Detects Differences as Small as .00005 Inch

Standard Models and Attachments for

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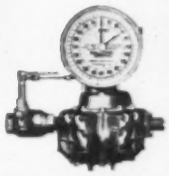
METERS *for* GAS—WATER—OIL—GASOLINE

GAS PRESSURE REGULATORS

Pittsburgh Water Meter

Pittsburgh Piston Gasoline Meter



EMCO Domestic Gas Meter

EMCO Orifice Meter

EMCO Ejector Gas Service Regulator

PITTSBURGH EQUITABLE METER CO., 400 N. Lexington Ave., Pittsburgh, Pa.

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Microchemical Service
Pfaltz & Bauer, Inc.
R C A Manufacturing
Spencer Lens Co.
Zeiss, Inc., Carl

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Gen. Elec. Lamp Dept.
Leitz, Inc.
Pfaltz & Bauer, Inc.
Spencer Lens Co.
Zeiss, Inc., Carl

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Chicago Apparatus Co.
Clay-Adams Co.
Fish-Schurman Co.
Gaertner Scientific Corp.
Gen. Biological Supply
Rieker Instrument Co.
Spencer Lens Co.
Welch Mfg. Co.

MICROSCOPES, Ballistic Comparison
Bausch & Lomb Optical
Leitz, Inc.
Spencer Lens Co.
Zeiss, Inc.

MICROSCOPES, Binocular
Bausch & Lomb Optical
Fuess, Inc.
Leitz, Inc.
Pfaltz & Bauer, Inc.
R C A Manufacturing
Scherr Co., Inc.
Spencer Lens Co.
Zeiss, Inc., Carl

MICROSCOPES Biological (See Microscopes, Binocular)

MICROSCOPES, Brinell
Bausch & Lomb Optical
Detroit Testing Mach.
Fisher Scientific Co.
Fuess, Inc.
Gaertner Scientific Corp.
Leitz, Inc.
Pittsburgh Inst. & Mach.
Riehle Division
Suter, Alfred

MICROSCOPES, Dark Field
Bausch & Lomb Opt.
Spencer Lens Co.

MICROSCOPES, Finish Comparison
Bausch & Lomb Optical
Fecker, J. W.
Fuess, Inc.
Gaertner Scientific Corp.
Leitz, Inc.
Scherr Co., Inc.
Spencer Lens Co.
Zeiss, Inc., Carl

MICROSCOPES, Inspection (See Microscopes, Finish Comparison)

MICROSCOPES, Measuring
Bausch & Lomb Optical
Central Scientific Co.
Ednal Co.
Fecker, J. W.
Fuess, Inc.
Gaertner Scientific Corp.
Jarrell-Ash Co.
Kern Co.
Leitz, Inc.
Mico Instrument Co.
Ruska & Co.
Scherr Co., Inc.
Triplex Machine Tool
Zeiss, Inc., Carl

MICROSCOPES, Metallographic
Bausch & Lomb Optical
Fuess, Inc.
Leitz, Inc.
Mico Instrument Co.
Pfaltz & Bauer, Inc.
Scherr Co., Inc.
Zeiss, Inc., Carl

MICROSCOPES, Petrographical
Bausch & Lomb Optical
Fuess, Inc.
Leitz, Inc.
Spencer Lens Co.
Zeiss, Inc., Carl

MICROSCOPES, Thread Contour (See Microscopes, Finish Comparison)

MICROSCOPES, Toolmaker's
Bausch & Lomb Optical
Fuess, Inc.
Gaertner Scientific Corp.
Goerz Amer. Optical
Leitz, Inc.

MICROSCOPES, Toolmakers' (Cont'd)
Mico Instrument Co.
Scherr Co., Inc.
Zeiss, Inc., Carl

MICROSCOPES, Wire Gaging
Bausch & Lomb Optical
Zeiss, Inc., Carl

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Cambridge Inst. Co.
Central Scientific Co.
International Equip. Co.
Leitz, Inc.
Mico Instrument Co.
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Thomas Co., Arthur H.

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MILEAGE METERS (See Meters, Mileage)

MILITARY INSTRUMENTS (See Ordnance Instruments)

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MILLIAMMETERS (See Ammeters, Milliammeters)

MILLIOHMMETERS (See Ohmmeters, Milliohmmeters)

MILLIVOLTMETERS (See Voltmeters, Millivoltmeters)

MINE GAS INDICATORS (See Detectors, Mine Gases)

MIRRORS
Bausch & Lomb Opt.
Clark & Sons
Fecker, J. W.
Fish-Schurman Co.
Fuess, Inc.
Gurley, W. & L. E.
Hathaway Inst. Co.
Keuffel & Esser Co.
Kollmorgen Optical Co.
Laboratory Specialties
Master Optical Co.
Perkin-Elmer Corp.
Pioneer Instrument
Rieker Inst. Co.
United Cinephone Corp.
Warren-Knight Co.

MODULATION METERS
Andrew, Victor J.
General Radio Co.
RCA Manufacturing Co.
Weston Elec. Inst. Corp.

MOISTURE METERS (See also Testers & Testing Machines, Moisture)
Delmhorst, William
Hart Moisture Gages
Tagliabue Mfg. Co.

MOISTURE TESTING APPARATUS (See Testers & Testing Machines, Moisture)

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Baird Associates
Bausch & Lomb Opt.
Fuess, Inc.
Gaertner Scientific Corp.
Leitz, Inc.
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Builders-Providence
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Foxboro Co.
Mason-Neilan Reg. Co.
Photoswitch, Inc.
RCA Manufacturing

MOTION RECORDERS
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Bristol Co.
Brush Development Co.
Builders-Providence
Elec. Tachometer Corp.
Foxboro Co.
Impact Register
Mason-Neilan Reg. Co.
RCA Manufacturing

MOTOR STARTERS (See Starters, Motor)

MOTORS, Fractional H.P.
Barber-Coleman Co.
Bodine Elec. Co.
Eclipse Aviation
Elsbert Mfg. Co.
General Elec. Co.
Holtzer-Cabot Elec.
Merkle-Korff Gear Co.

MOTORS, Geared
Merkle-Korff Gear Co.

MOTORS, Laboratory
Bodine Elec. Co.
Central Scientific Co.
Eastern Engg. Co.
General Elec. Co.
L. A. B. Corp.
Machlett & Son
Merkle-Korff Gear Co.
Parr Instrument Co.
Sargent & Co.
Welch Mfg. Co.

MOTORS, Synchronous
Bendix Marine Products
Bodine Elec. Co.
Columbia Elec. Mfg.
Elec. Indicator Corp.
General Elec. Co.
Holtzer-Cabot Elec.
Merkle-Korff Gear Co.
Sangamo Electric Co.
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Precision Resistor Co.
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Geophysical Inst. Co.
Heiland Research
Kenyon Instrument Co.
Kuner Co., Max
Marine Compass Co.
Moeller Instrument Co.
Moisture Register Co.
Negus, T. S. & J. D.
RCA Manufacturing
Rieker Instrument Co.
Thompson Clock Co.

NAVAL INSTRUMENTS
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Bendix Marine Products
Bowser & Co.
Elec. Tachometer Corp.
Geophysical Inst. Co.
Keuffel & Esser Co.
Moeller Instrument Co.
RCA Manufacturing
Scientific Inst. Co.

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Bausch & Lomb Opt.
Bliss & Co.
Eastern Science Co.
Elgin National Watch
Geophysical Instrument
Heiland Research
Keuffel & Esser Co.
Marine Compass Co.
Negus, T. S. & J. D.
Pioneer Instrument Co.
RCA Manufacturing
Weston Electrical Inst.

NEEDLES, Asphalt Penetration
Alpha Instrument Co.
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Eimer & Amend
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Saxl Inst. Co.
Tagliabue Mfg. Co.
Van Keuren Co.

NEEDLES, Dip
Gurley, W. & L. E.

NEEDLES, Gillmore
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Central Scientific Co.
Fisher Scientific Co.
Humboldt Mfg. Co.
Riehle Div.
Saxl Inst. Co.

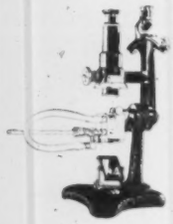
NEEDLES, Penetrometer
Alpha Instrument Co.
Central Scientific Co.
Eimer & Amend
Fisher Scientific Co.
Humboldt Mfg. Co.
Saxl Inst. Co.
Tagliabue Mfg. Co.
Van Keuren Co.

NEEDLES, Vicat
American Inst. Co.
Central Scientific Co.
Olsen Testing Machine
Fisher Scientific Co.
Humboldt Mfg. Co.
Riehle Div.
Saxl Inst. Co.

Spencer Instruments for Industrial Control

Spencer Stereoscopic Microscopes are used for the examination of details too small to be seen by the unaided eyes—to examine impurities or inclusions in raw materials, flaws or irregularities in materials being processed, surface characteristics of finished products. A vivid three dimensional image is obtained.

The Spencer No. 33 Microscope is adaptable to almost any type of microscopic examination and is designed for convenience in quickly changing magnifications or types of illumination, for photomicrography, for measuring, counting or examination of materials.



The Spencer Refractometer provides a quick and accurate method for determining the refractive indices of liquids and solids.

The Spencer No. 41 Polarizing Microscope is used for identification of crystalline materials by means of their optical constants.

Direct Result COLORIMETER is used wherever characteristic color is produced proportional in intensity to the concentration of a substance in solution.

The Spencer Polarimeter through the use of Polaroid makes possible the design of an inexpensive instrument of the Lippich triple field type. Sample tubes of several lengths are available for measuring concentration of various sugars in solution.

Write Dept. No. A32 for catalogs describing these instruments more completely.

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BUFFALO, NEW YORK
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Moisture Testing Simplified

BRABENDER SEMI-AUTOMATIC MOISTURE TESTER FOR LABORATORY AND PLANT CONTROL

An ideal combination of drying oven and analytical balance. Requires no training—just push down a lever and read the moisture loss from an illuminated dial—directly in percentages.

Accuracy—1/20th of one percent. Capacity—Ten 10-gram samples. Temperature Range—85° C.-175° C. Moisture Range—0%-100%. Heating Capacity—750 Watts. Operating Current—110 volts, 60 cycles, AC (25 cycles if required). Heating up time—5 to 10 minutes.

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ROCHELLE PARK, NEW JERSEY

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Leitz, Inc.
Rubicon Co.
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LaMotte Chemical Prod.
NITROGEN DETERMINATION APPARATUS
Ace Glass Inc.
Central Scientific Co.
Chicago Apparatus Co.
Eimer & Amend
Fisher Scientific Co.
Laboratory Construction
Microchemical Service
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Scientific Glass Apparatus
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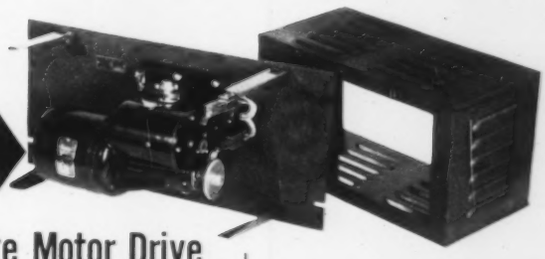

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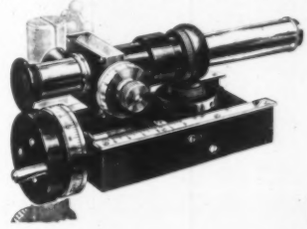
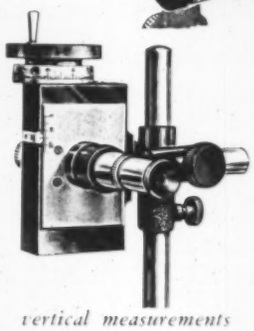
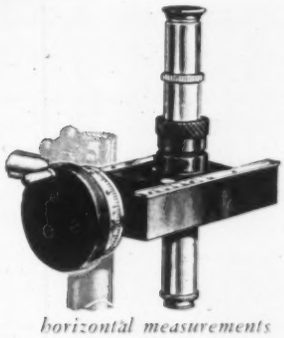


micrometer focusing



vertical measurements



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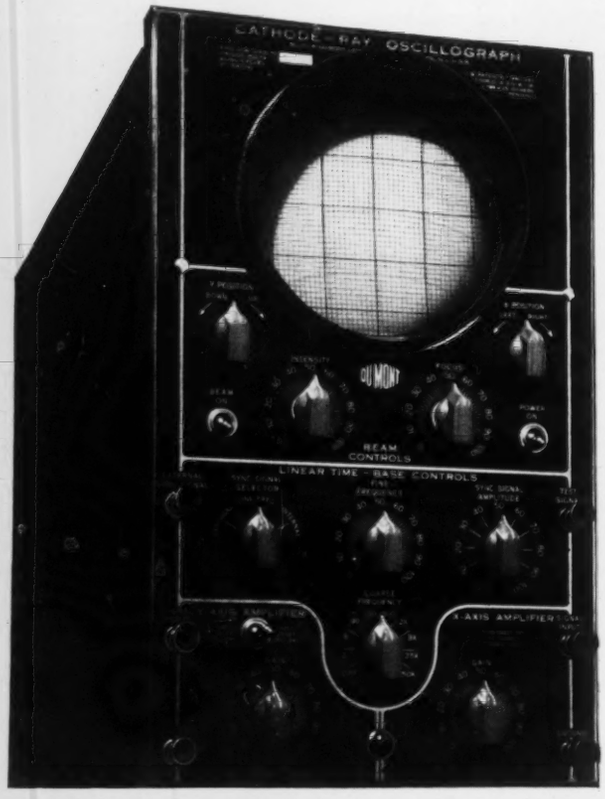

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Televiso Co.
Triplett Electrical Inst.
Triumph Mfg. Co.
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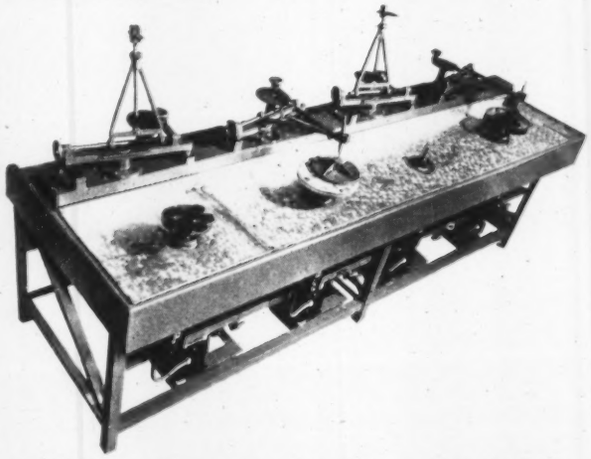

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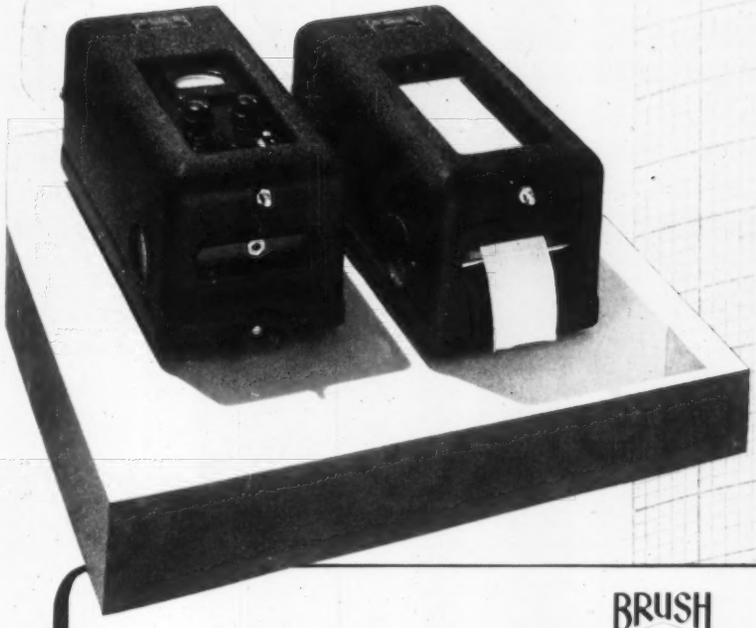

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Electro-Medical Lab.
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Cambridge Inst. Co.
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Cambridge Inst. Co.
Fisher Scientific Co.
General Electric Co.
Hathaway Inst. Co.
Leeds & Northrup Co.
Rubicon Co.
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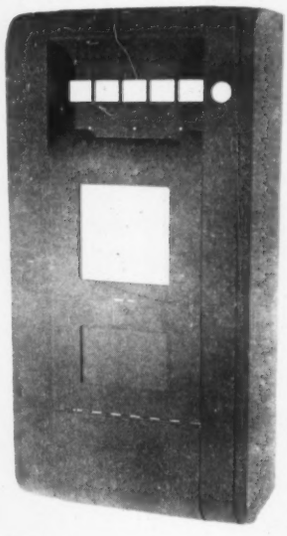

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Rhamstine, J. Thos.
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Gaertner Scientific Corp.
Hayes Scientific App.
Jarrell-Ash Co.
Mico Instrument Co.

PHOTOMETERS, Neutral Wedge
American Inst. Co.
Gaertner Scientific Corp.

PHOTOMETERS, Photoelectric
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Applied Research Labs.
Cambridge Inst. Co.
Central Scientific Co.
De Jur Amsco Corp.
Electronic Prods. Co.
Gaertner Scientific Corp.
General Elec. Co.
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Phipps & Bird, Inc.
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Rubicon Co.
Southw'n Electronics Labs.
Welch Mfg. Co.
Zeiss, Inc., Carl

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American Inst. Co.
Bausch & Lomb Opt.
Gaertner Scientific Corp.
Munsell Color Co.

PHOTOMETERS, Spectro
Akatos, Inc.
American Inst. Co.
Baird Associates
Bausch & Lomb Opt.
Coleman Electric Co.
Fuess, Inc.
Gaertner Scientific Corp.
Jarrell-Ash Co.
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Leeds & Northrup Co.

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Burt Scientific Labs.
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PITOT TUBES (see Flowmeters, Pitot Tube)

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Bacharach Indus. Inst.
Keuffel & Esser Co.
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United States Blue Print
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PLANIMETERS, Radial
Bailey Meter Co.
Foxboro Co.
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Speidel & Co.
Trill Indicator Co.

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Foxboro Co.
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Keuffel & Esser Co.
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Gaertner Scientific Corp.
Jarrell-Ash Co.
Kern Co.
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Pfaltz & Bauer, Inc.
Sargent & Co.
Spencer Lens Co.
Zeiss, Inc., Carl

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Bausch & Lomb Opt.
Gaertner Scientific Corp.
Jarrell-Ash Co.
Pfaltz & Bauer, Inc.
Welch Mfg. Co.

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Central Scientific Co.
Fecker, J. W.
Fuess, Inc.
Gaertner Scientific Corp.
Jarrell-Ash Co.
Kollmorgen Optical Co.
Photoelastic Co.
Polarizing Instrument
Precision Therm.
Xervac Inst. Co.
Zeiss, Inc., Carl

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Fuess, Inc.
Polarized Products
Polarizing Instrument
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Eimer & Amend
Fisher Scientific Co.
Mico Instrument Co.

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Associated Research

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Coors Porcelain Co.
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Bendix Marine Products
Boston Auto Gage Co.
Builders-Providence
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Electric Speed Ind.
Elec. Tachometer Corp.
Foxboro Co.
General Elec. Co.
Hickok Elec. Inst. Co.
Leupold, Volpel & Co.
Pioneer Instrument Co.
Roller-Smith Co.
Shallcross Mfg. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

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Annis Co.
Autocall Co.
Bailey Meter Co.
Builders-Providence
Elec. Indicator Corp.
Elec. Tachometer Corp.
Foxboro Co.
RCA Manufacturing
Westinghouse Elec. & Mfg.

POSTS, BINDING (See Connectors)

POTENTIAL DETECTORS (See Detectors, Potential)

POTENTIOMETERS, Automatic Control
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Coleman Elec. Co.
Dickson Co.
Foxboro Co.
Leeds & Northrup Co.
Lewis Engg. Co.
Mason Neilan Regulator
Spence Engineering Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Weston Elec. Inst. Corp.
Wheelco Inst. Co.

POTENTIOMETERS, Automatic Self Balancing
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Bristol Co.
Electronic Prod. Co.
Foxboro Co.
Leeds & Northrup Co.
Lewis Engg. Co.
Tagliabue Mfg. Co.
Weston Elec. Inst. Corp.

POTENTIOMETERS, Indicating
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Bristol Co.
Brown Inst. Co.
Cambridge Inst. Co.
Dickson Co.
Foxboro Co.
General Elec. Co.
Hellige, Inc.
J-B-T Instr., Inc.
Leeds & Northrup Co.
Lewis Engg. Co.
Rubicon Co.
Tagliabue Mfg. Co.
Thwing-Albert Instrument
Wheelco Inst. Co.
Weston Elec. Inst. Corp.

POTENTIOMETERS, Recording
American Inst. Co.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Clarostat Mfg. Co.
Foxboro Co.
Leeds & Northrup Co.
Lewis Engg. Co.
Mason Neilan Regulator
Tagliabue Mfg. Co.
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Potentiometers FOR INSTRUMENT CALIBRATION FOR RESEARCH AND TESTING

For measuring temperature and pH, for checking thermocouple pyrometers, for calibrating deflection meters, for any measurement of small emf, we furnish potentiometers of precision suitable to the application . . . whether for industrial testing or for exacting laboratory work.

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Roller-Smith Co.
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POWER FACTOR RECORDERS
Elec. Facilities Inc.
Esterline-Angus Co.
General Elec. Co.
Leeds & Northrup Co.
Roller-Smith Co.
Westinghouse Elec. & Mfg

POWER FACTOR REGULATORS
Leeds & Northrup Co.
Vaughn-G. E. Witt Co.

POWER-LEVEL INDICATORS
Amplifier Co.
Clough-Brengle Co.
General Elec. Co.
General Radio Co.
Hickok Elec. Inst. Co.
RCA Manufacturing
Shaircross Mfg. Co.
Sound Apparatus Co.
Westinghouse Elec. & Mfg

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Ace Glass Inc.
Fischer & Porter
Fish-Schurman Co.
Scientific Glass

PRESSES, Laboratory
American Inst. Co.
Baldwin-Southwark Corp.
Central Scientific Co.
Eimer & Amend
Hydraulic Press Co.
Laboratory Specialties
Microchemical Service
Williams Apparatus

PRESSES, PELLET
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Eimer & Amend
Hannifin Mfg. Co.
Parr Instrument Co.
Stokes Machine Co.

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Arca Regulators, Inc.
Atlas Valve Co.
Bailey Meter Co.
Baldwin-Southwark Corp.
Brooke Eng. Co.
Brown Inst. Co.
Clapp Instrument
Crosby Steam Gage Co.
Fisher Governor Co.
Foxboro Co.
Heise Bourdon Tube Co.
Kollsman Inst. Co.
Kurman Electric Co.
Linde Air Products Co.
Marsh Corp.
Mason Neilan Regulator
McAlear Mfg. Co.
Pioneer Instrument
RCA Manufacturing Co.
Republic Flow Meters
Star Brass Mfg. Co.
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Taylor Inst. Cos.
Thrush & Co., H. A.
Trerice Co.

PRESSURE, HIGH (Above 1000 lbs.) Recorders
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Baldwin-Southwark Corp.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Cambridge Inst. Co.
Cash Co.
Commercial Engg. Labs.
Crosby Steam Gage Co.
Dickson Co.
Esterline-Angus Co.
Foxboro Co.
Hydraulic Press Co.
Kurman Electric Co.
Linde Air Products Co.
Marsh Corp.
Mason-Neilan Regulator
Republic Flow Meters Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.

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Baldwin-Southwark Corp.
Builders-Providence
Crosby Steam Gage Co.
Foxboro Co.
Kurman Electric Co.
Parr Instrument Co.
Pioneer Instrument
RCA Manufacturing Co.
Refinery Supply Co.
Walter Ruska & Co., Inc.
Star Brass Mfg. Co.

PRESSURE INDICATORS, Bellows
Autocall Co.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Crosby Steam Gage Co.
Defender Automatic Reg.
Dickson Co.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Pioneer Instrument
Precision Therm.
Tagliabue Mfg. Co.
Taylor Inst. Cos.

PRESSURE INDICATORS, Bourdon-tube
Bailey Meter Co.
Baldwin-Southwark Corp.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Clapp Instrument
Crosby Steam Gage Co.
Dickson Co.
Foxboro Co.
Heise Bourdon Tube Co.
Hoke, Inc.
Kenyon Instrument Co.
Kollsman Inst. Co.
Marsh Corp., Jas. P.
Mason-Neilan Regulator
Pioneer Instrument
Republic Flow Meters
Star Brass Mfg. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.

PRESSURE INDICATORS, Diaphragm, etc.
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Bailey Meter Co.
Brown Inst. Co.
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(Cont'd)
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Foxboro Co.
Kollsman Inst. Co.
Marsh Corp., Jas. P.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Pioneer Instrument
Powers Regulator Co.
Rochester Mfg. Co.
Tagliabue Mfg. Co.
Taylor Instrument Cos.

PRESSURE INDICATORS, Electrical-resistance
Baldwin-Southwark Corp.
General Elec. Co.
Kurman Electric Co.
Rubicon Co.

PRESSURE INDICATORS, Inverted-bell
Bacharach Indus. Inst.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Dickson Co.
Foxboro Co.
Mason-Neilan Regulator
Taylor Inst. Cos.
Uehling Inst. Co.

PRESSURE INDICATORS, Membrane
Bailey Meter Co.
Dickson Co.
Mason-Neilan Regulator

PRESSURE INDICATORS, Piezoelectric
Batcher, Ralph R.
Brush Development Co.
Commercial Engg. Labs.
RCA Manufacturing Co.

PRESSURE INDICATORS, Piston, Weight-loaded
American Inst. Co.
Bailey Meter Co.
Hagan Corp.
Pioneer Instrument
Ruska & Co.

PRESSURE INDICATORS, Single-tube, liquid column
Bacharach Indus. Inst.
Detroit Air Meter Co.
Dwyer Mfg. Co.
Gas App. Specialties
Meriam Co.
Morey & Jones, Ltd.
Pioneer Instrument
Precision Therm.
Uehling Instrument Co.

PRESSURE INDICATORS, Spring-loaded piston
Bacharach Indus. Inst.
Commercial Engg. Labs.

PRESSURE INDICATORS, U-tube
Amthor Test. Mach.
Bacharach Indus. Inst.
Bailey Meter Co.
Connelly Iron Sponge
Detroit Air Meter Co.
Dwyer Mfg. Co.
Friez & Sons
Gas App. Specialties
Gotham Inst. Co.
Manning Maxwell & Moore
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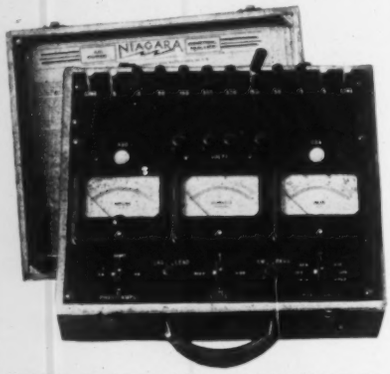
Conserving electrical energy is of prime importance in national defense. Low Power Factor operation and defective equipment spells waste and inefficiency which must be corrected. Niagara Industrial Analyzers quickly gives complete values of an electrical power test. . . 3 PHASE • 2 PHASE • SINGLE PHASE



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A Portable Test Laboratory for A.C. Power Measurement

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POWER FACTOR
Reactive Kilovolt-Amperes
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A.C. Ranges . . . .

AMPERES
0—1.5—5—15—50—150—300
VOLTS
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WATTS
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MODELS 77-78 Industrial Analyzers are normally furnished with complete "tailored to fit" accessories—extra flexible heavy current conductors which are provided with special insulated terminals for both meter and line connections; also light flexible voltage leads with special terminals. A separate case is provided for carrying all accessories which includes Test Report forms and motor efficiency data. Instructions which include wiring diagrams, are mounted into the cover of meter.

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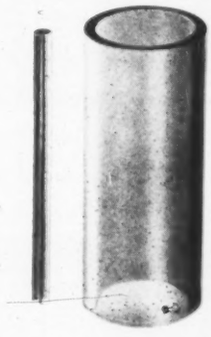

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Morey & Jones, Ltd.
Republic Flow Meters
Tagliabue Mfg. Co.
Taylor Inst. Cos.

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Bristol Co.
Brown Inst. Co.
Builders-Providence
Dickson Co.
Esterline-Angus Co.
Foxboro Co.
Gotham Inst. Co.
Improved Gauge Mfg. Co.
Kenyon Instrument Co.
Leeds & Northrup Co.
Manning, Maxwell & Moore
Marsh Corp., Jas. P.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Republic Flow Meters
Star Brass Mfg. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thrush & Co., H. A.
Trerice Co.

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Brown Inst. Co.
Foxboro Co.
Dickson Co.
Marsh Corp., Jas. P.
Mason-Neilan Regulator
Morey & Jones, Ltd.
Tagliabue Mfg. Co.

PRESSURE RECORDERS, Electrical-resistance
Republic Flow Meters

PRESSURE RECORDERS, Inverted-bell
Bacharach Indus. Inst.
Bailey Meter Co.
Bristol Co.
Dickson Co.
Foxboro Co.
Leeds & Northrup Co.
Mason-Neilan Regulator
Taylor Inst. Cos.
Uehling Instrument Co.

PRESSURE RECORDERS, Membrane
Mason-Neilan Regulator

PRESSURE RECORDERS, Piezoelectric
Brush Development Co.
RCA Manufacturing Co.

PRESSURE RECORDERS, Piston, weight-loaded
Bailey Meter Co.

PRESSURE RECORDERS, Single-tube liquid column
Trerice Co.
Uehling Instrument Co.

PRESSURE RECORDERS, Spring-loaded piston
Bacharach Indus. Inst.
Baldwin-Southwark Corp.
Commercial Engg. Labs.
Esterline-Angus Co.

PRESSURE RECORDERS, U-tube
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Brown Inst. Co.
Foxboro Co.
Manning, Maxwell & Moore
Mason-Neilan Regulator
Republic Flow Meters
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.
Uehling Instrument Co.

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Marsh Corp.
Martin Decker Corp.
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Meriam Co.
National Engg. Prods.

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Clark & Sons
Fish-Schurman Co.
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Gaertner Scientific Corp.
Goerz Amer. Optical Co.
Jarrell-Ash Co.
Kern Co.
Keuffel & Esser Co.
Kollmorgen Optical Co.
Machlett & Son
Perkin-Elmer Corp.
Rieker Inst. Co.
Spencer Lens Co.
Valpey Crystals

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PROGRAM CLOCKS (See Timers, Automatic Process)

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Bausch & Lomb Optical
Bell & Howell Co.
Leitz, Inc.
RCA Manufacturing
Spencer Lens Co.

PROJECTORS, Film Slide, Lantern Slide & Opaque Object
Bausch & Lomb Optical
Burton Mfg. Co.
Leitz, Inc.
Spencer Lens Co.
Zeiss, Inc.

PROJECTORS, Rectifying
Abrams Instrument

PROTRACTORS, Bevel (See Drawing Instruments)

PROTRACTORS, Course
Alpha Instrument Co.
Bliss & Co.
Eastern Science Co.
Kenyon Instrument Co.
Keuffel & Esser Co.
Marine Compass Co.
Negus, T. S. & J. D.
Warren-Knight Co.

PROTRACTORS, Navigators (See Protractors, Course)

PROTRACTORS, Transparent (See Drawing Instruments)

PROVERS, Gas Meter
Lambert Meter Co., Inc.
Pittsburgh Equit. Meter
Superior Meter Co.

PROVERS, Water Meter
Pittsburgh Equit. Meter

PROVING RINGS
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Morehouse Machine Co.
Olsen Testing Machine
Pittsburgh Inst. & Mach.

PSYCHOLOGY LABORATORY APPARATUS
Batcher, Ralph R.
Brush Development Co.
Electro-Medical Lab.
General Radio Co.
Gorrell & Gorrell
Phipps & Bird, Inc.

PSYCHROMETERS, Aspiration
American Moistening Co.
Brown Inst. Co.
Friez & Sons
Fuess, Inc.
G. M. Mfg. Co., Inc.
H-B Inst. Co., Inc.
Mason-Neilan Regulator
Moeller Instrument Co.
Palmer Co.

PSYCHROMETERS, Atomizing
Parks-Cramer Co.

PSYCHROMETERS, Electric (See Psychrometers, Aspiration)

PSYCHROMETERS, Recording (See Hygrometers, Recording)

PSYCHROMETERS, Sling
Accuracy Scientific Inst.
American Inst. Co.
American Moistening Co.
Central Scientific Co.
Chicago Apparatus Co.
Foxboro Co.
Fried & Lustig
Friez & Sons
Fuess, Inc.
G. M. Mfg. Co., Inc.
Green, Henry J.
H-B Inst. Co., Inc.
Huddleston, J. S. F.
Johnson Service Co.
Moeller Instrument Co.
Palmer Co.
Parks-Cramer Co.
Phila. Thermometer Co.
Precision Therm.
Scientific Inst. Co.
Taylor Inst. Cos.
Trerice Co.
Warren-Knight Co.
Weksler Thermometer

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Chicago Apparatus Co.
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Hellige, Inc.
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Precision Scientific Co.
Rieker Inst. Co.
Rubicon Co.
Scientific Glass App.
Taylor & Co., Inc. W. A.

PULSATION DAMPER (See Pressure Snubber)

PULVERIZED MATERIALS MEASUREMENTS (See Granular Materials)

PUMPS, High Vacuum
Central Scientific Co.
Chicago Apparatus Co.
Distillation Prods., Inc.
Machlett & Son
Nelson, George F.
Refinery Supply Co.
Scientific Glass App.
Sterling Eng. Co.
Stokes Machine Co.
Welch Mfg. Co.

PYCNOMETERS
Eimer & Amend
Fisher Scientific Co.
G. M. Mfg. Co.
Rascher & Betzold
Specialty Glass Co.

PYRHELIOMETERS
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Eppley Lab.
Leeds & Northrup Co.

PYROMETER CALIBRATING SETS
Brown Inst. Co.
Cambridge Inst. Co.
Foxboro Co.
Leeds & Northrup Co.
Lewis Engineering
Rubicon Co.
Tagliabue Mfg. Co.
Thwing-Albert Inst. Co.

PYROMETERS, Electrical Resistance
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Brown Inst. Co.
Cambridge Inst. Co.
Dickson Co.
Foxboro Co.
General Elec. Co.
Ill. Testing Labs.
J-B-T Insts., Inc.
Leeds & Northrup Co.
Lewis Engg. Co.
Roller-Smith Co.
Rubicon Co.
Tagliabue Mfg. Co.
Thwing-Albert Inst. Co.
Wheelco Inst. Co.

PYROMETERS, Expansion
Defender Automatic Reg.
Fenner Co.
Partlow Corp.
Tagliabue Mfg. Co.

PYROMETERS, Indicating
Bacharach Indus. Inst.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Burling Inst. Co.
Burrell Tech. Supply
Electrical Prods.
Elematic Sales Corp.
Engelhard, Chas.
Foxboro Co.
Ill. Testing Labs.
Leeds & Northrup Co.
Lewis Engg. Co.
Partlow Corp.
Pyrometer Inst. Co.
Roller-Smith Co.
Rubicon Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thwing-Albert Instrument
Wheelco Inst. Co.

PYROMETERS, Millivoltmetric
Am. Gas Furnace Co.
Bristol Co.
Brown Inst. Co.
Cambridge Inst. Co.
De Jur-Amsco Corp.
Elematic Sales Corp.
Engelhard, Chas.
Foxboro Co.
Hoskins Mfg. Co.
Ill. Testing Labs.
Pyrometer Instrument Co.
Roller-Smith Co.
Rubicon Co.
Taylor Inst. Cos.
Thwing-Albert Instrument
Wheelco Inst. Co.

PYROMETERS, Optical
Bacharach Indus. Inst.
Brown Inst. Co.
Burrell Technical Supply
Cambridge Inst. Co.
Fisher Scientific Co.
Leeds & Northrup Co.
Pyrometer Instrument Co.

PYROMETERS, Portable
Bacharach Indus. Inst.
Bristol Co.
Brown Inst. Co.
Burrell Technical Supply
Cambridge Inst. Co.
Elematic Sales Corp.
Engelhard, Chas.
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FURNACES PYROMETERS

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TEMPERATURE CONTROL EQUIPMENT

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All Makes and Types of Above

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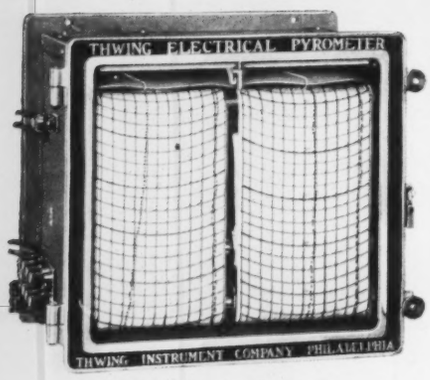
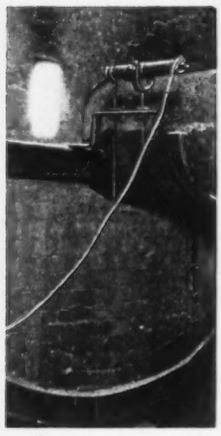
THWING-ALBERT Plant

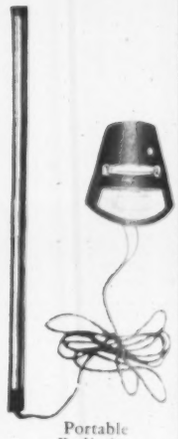


Multiple Recording Pyrometer

Indicating Pyrometer combined with Selector Switch



Radiation Pyrometer for Rotary Kiln



Portable Radiation Pyrometer

Treasure Chest Pyrometer and Thermocouple Testing Set.

FOR THE WAR EFFORT

United for Victory

Enlarged Manufacturing Facilities

Automatic Temperature Controller

Our new home in the Germantown District of Philadelphia provides us with the greater floor space and increased manufacturing facilities needed for the manufacture of Thwing-Albert Instruments serving their useful purposes in many phases of the War Effort. In many instances we are serving our Government directly and in many more instances we are serving private industry; doing our part in the great task of producing the supplies and equipment needed for the Arsenal of Democracy.

Thwing-Albert Instruments cover a wide range of applications including: a complete line of recording and indicating thermo-electric pyrometers for all heat treatment and heating processes; pyrometers for obtaining temperature readings of molten metal in iron and brass foundries; recording and

A5X Pyrometer for molten non-ferrous metals

Portable pH Meter

Thwing-Albert

Manufacturers of Scientific

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Commercial Industry

Catalogs Available on Commercial Industry

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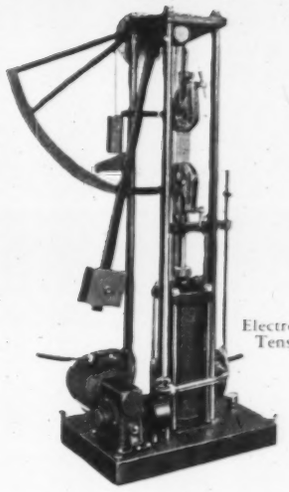
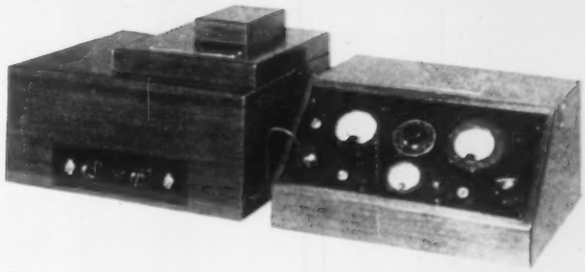
Platinum Thermo-couple

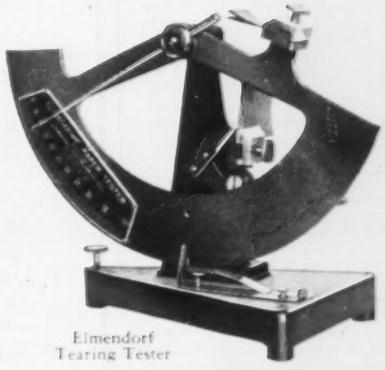
Research Tearing Tester



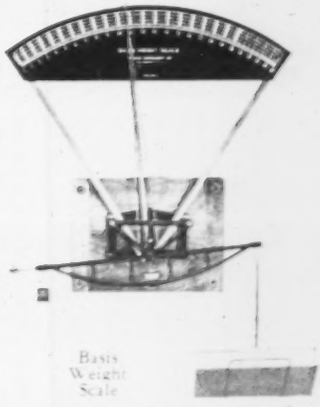
Electro Hydraulic Tensile Tester



Formation Tester for Paper



Elmendorf Tearing Tester



Basis Weight Scale

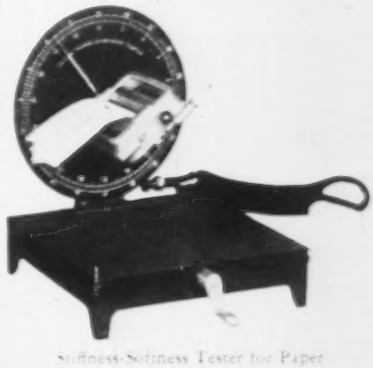
indicating radiation pyrometers for highest temperatures encountered in industry, i.e., high temperature furnaces in glass plants, front end temperatures in rotary kilns, etc.; automatic temperature control equipments for oil and gas fired and electrically heated furnaces; portable potentiometers; pyrometer and thermocouple testing sets; recording and indicating electrical resistance thermometers for accurate measurement of very low temperatures.

Also, we manufacture a variety of instruments for the Aircraft Industry, including Tensiometers, Pelorus Drift Sights, Airplane Engine Cylinder Thermometer Testers, Aircraft Pyrometer Switches, Radio Selector Switches, Vibration Testers, Dial Gauge Calibrators, etc.

For the paper industry we manufacture an extensive line of testing instruments, all made to conform to the technical and physical requirements of the industry. These paper testing instruments have proved an important factor in promoting the technical advancement in the industry in recent years.

Illustrations on these pages show a few of the better-known Thwing-Albert Instruments.

WE SOLICIT YOUR INQUIRIES



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and Paper Testing Instruments

Desk Type Basis Weight Scale

Penescope

Vaporimeter

Pyrometers... CONTROLLING RECORDING INDICATING

Accurate, sturdy, low in maintenance, Micromax is industry's standard of reliability for automatic measurement and control of temperature. Four models: Strip-chart and round-chart recording controllers; indicating and non-indicating controllers. Uses thermocouple, Rayotube (radiation thermopile) or Thermohm (resistance thermometer).

Speedomax, ten times as rapid as the usual recording pyrometer, records temperature of moving slabs, billets, etc. L&N Optical Pyrometer is direct-reading; for temperatures up to 5200 F.

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Ill. Testing Labs.
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Pyrometer Instrument Co.
Rubicon Co.
Tagliabue Mfg. Co.
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Brown Inst. Co.
Cambridge Inst. Co.
Dickson Co.
Foxboro Co.
J-B-T Insts., Inc.
Leeds & Northrup Co.
Lewis Engg. Co.
Rubicon Co.
Tagliabue Mfg. Co.
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Bacharach Indust. Inst.
Bailey Meter Co.
Brown Inst. Co.
Cambridge Inst. Co.
Engelhard, Chas.
Foxboro Co.
General Elec. Co.
Ill. Testing Labs.
Leeds & Northrup Co.
Thwing-Albert Instrument
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Bristol Co.
Brown Inst. Co.
Cambridge Inst. Co.
General Elec. Co.
Leeds & Northrup Co.
Pyrometer Instrument Co.
Thwing-Albert Instrument
Wheelco Inst. Co.

PYROMETERS, Radiation, Recording
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Bristol Co.
Brown Inst. Co.
Cambridge Inst. Co.
General Elec. Co.
Leeds & Northrup Co.
Pyrometer Instrument Co.
Thwing-Albert Instrument

PYROMETERS, Thermoelectric, Immersion
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Brown Inst. Co.
Cambridge Inst. Co.
Elematic Sales Corp.
General Elec. Co.
Ill. Testing Labs.
J-B-T Insts., Inc.
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Partlow Corp.
Pyrometer Inst. Co.
Roller-Smith Co.
Tagliabue Mfg. Co.
Thwing-Albert Instrument
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Bristol Co.
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De Jur-Amsco Corp.
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Roller-Smith Co.
Rubicon Co.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thwing-Albert Instrument
Western Instrument Co.
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Bailey Meter Co.
Beck Co.
Bristol Co.
Brown Inst. Co.
Cambridge Inst. Co.
Engelhard, Chas.
Foxboro Co.
General Elec. Co.
Ill. Testing Labs.
(Cont'd)

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Mason-Neilan Regulator
Partlow Corp.
Pyrometer Instrument Co.
Tagliabue Mfg. Co.
Thwing-Albert Instrument

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Elematic Sales Corp.
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General Elec. Co.
Ill. Testing Labs.
J-B-T Instruments
Lewis Engg. Co.
Pyrometer Instrument Co.
Schweitzer & Conrad
Tagliabue Mfg. Co.
Thwing-Albert Instrument

PYROMETRIC CONES (See Cones, Pyrometric)

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Simpson Elec. Co.
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RADIO-MICROMETERS (See Micrometers, Radio)

RADIO REMOTE CONTROL SYSTEMS
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McFarlin Co.
Pioneer Instrument
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Wallace & Tiernan

RADIO SET ANALYZERS (See Analyzers, Radio Set)

RADIO TEST PANELS (See Panels, Radio Test)

RADIO TUBE CHECKERS (See Checkers, Radio Tube)

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Fuess, Inc.
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Gurley, W. & L. E.
Keuffel & Esser Co.
Leupold, Volpel & Co.
Precision Therm.
Taylor Inst. Cos.
Warren-Knight Co.
White Co., Inc.

RAINFALL RECORDERS
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Friez & Sons
Fuess, Inc.
Green, Henry J.
Leupold, Volpel & Co.
Taylor Inst. Cos.

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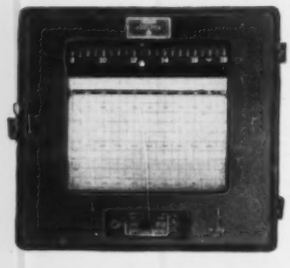
Leitz, Inc.
Precision Therm.
RCA Manufacturing
White Co., Inc.

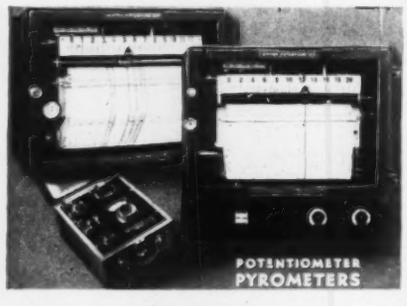
RANGE POLES (See Surveying Instruments)

FOXBORO
PYROMETERS



The Foxboro Pyrometer line embraces a variety of types including Indicators, Controllers and Recorder Controllers. Single and multiple recording instruments up to eight records on one chart are available. The Recorder-Controller is made in several types, both air- and electrically-operated, to fill practically every conceivable need.

For complete information write for Bulletin No. 190-4. **The Foxboro Company, 46 Neponset Avenue, Foxboro, Massachusetts, U. S. A.** Branch offices in principal cities of the United States and Canada.



For Controlling, Recording and Indicating Temperatures from —150°F. to +3200°F.

An extremely accurate and dependable instrument, designed and built for industrial service. Operating on the Potentiometer Principle, the instrument can be located practically any distance from the point of temperature measurement (thermocouple location) without affecting its accuracy or dependability.

Charts and scales for a wide variety of ranges are available, from a minimum temperature span of 300° to a maximum span of 3000°F. Corresponding Centigrade scales and charts are also available.

Pyrometer accessories, such as thermocouples and extension lead wire, furnished with instruments to meet the individual requirements of each job.

Write for Catalog 1104. THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4482 Wayne Avenue, Philadelphia, Pa.

BROWN PYROMETERS
AND
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS
To Measure and Control is to Economize

Portable Pyrometer Potentiometers

Both standard and pocket size instruments are available. All are truly portable, being free from effects of vibration and ambient temperature. Only one balancing operation is necessary. They may be used in any position and are standard test equipment for engine test stands, aircraft, trucks, tanks, and all vehicles while in motion.

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THE LEWIS ENGINEERING CO.
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For addresses, see pages 82-91

PYROMETERS AND ACCESSORIES

Pyrometers-Thermometers-Thermostats

WALL, PANEL AND PORTABLE TEMPERATURE INSTRUMENTS A SPECIALTY (All applications)

THERMOCOUPLE PROTECTING TUBES
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ALL THERMOCOUPLE ACCESSORIES

(in most cases available from stock)

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ELEMATIC CORPORATION

12757 S. Western Ave. **Blue Island, Ill.**

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No motors, no depressor bars—no contacts

The Alnor is a simplified controller which operates on an electronic principle similar to a radio.

The pointer of the pyrometer carries a vane. Two similar condenser vanes are attached to the arm of the adjustable target. When the pyrometer pointer reaches the target setting, the pointer vane passes between the condenser vanes and causes a change in the capacity of the circuit which in turn actuates the switch controlling the heating current or fuel valve. A red eye tells whether the heat is on or off.

With no motors, contacts, depressor bars, there is no time lag in response and the utmost in ruggedness and durability is provided. *Write for bulletin No. 3197-A*

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PYRO THE SIMPLIFIED OPTICAL PYROMETER

YOU cannot afford NOT to own one!

Because it eliminates guesswork, waste and spoilage; it pays for itself quickly. PYRO is a **SELF-CONTAINED, DIRECT - READING, STURDY** unit made to stand rough use but it is absolutely accurate and dependable.

Unique construction enables operator to rapidly determine temperature even on minute spots, fast moving objects or the smallest streams; no correction charts, no accessories, no upkeep.

Stock Ranges: 1400° to 5500° F.

PYRO RADIATION PYROMETER

Ideal for furnace or kiln use. Gives actual heat of material aside from furnace or kiln temperature. Does not require skilled operator. Stock ranges 1000° to 3600° F.

Write for special catalog on PYRO Optical, Bi-Optical, Micro-Optical, Radiation, Immersion and Surface Pyrometers.

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Temperature Measuring Instruments

Wheelco Precision Temperature Measuring Instruments include:

INDICATING PYROMETERS—PORTABLE PYROMETERS — PORTABLE POTENTIOMETERS — RECORDING OR INDICATING THERMOMETERS — RESISTANCE THERMOMETERS, ETC.

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Wheelco Instruments Co.

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- RUGGED, ACCURATE
- MANY SIZES, RANGES, INCLUDING 3½" PANEL
- THERMOELECTRIC, OR POTENTIOMETRIC; ALSO RESISTANCE TYPE

Model 70-PO potentiometer-pyrometer (portable model illustrated—also wall mounted) combines potentiometer accuracy with ease of reading deflection instrument. Eliminates balancing, is read faster. Write for literature, suggesting application.

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For addresses, see pages 82-91

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Amplifier Co.
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Benwood Linze
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DuMont Labs., Inc., A.B.
Electro Products Labs.
Electrons, Inc.
General Elec. Co.
Hy-Ef Elec. Products
Mellaphone Corp.
Raytheon Mfg. Co.
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Fuess, Inc.
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Mercon Regulator Co.
National Airoil Burner
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Mason-Neilan Regulator
Parks-Cramer Co.
Powers Regulator Co.
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Brown Inst. Co.
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Foster Engg. Co.
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Natural Gas Equipment
Penn Electric Switch
Perfex Corp.
Republic Flow Meters
Robertshaw Thermostat
Ruggles-Klingemann
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Frick Co.
Gaertner Scientific
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Robertshaw Thermostat
Tagliabue Mfg. Co.
Victor Equipment Co.

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Amplifier Co.
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Cutler-Hammer, Inc.
General Elec. Co.
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Robertshaw Thermostat
Roller-Smith Co.

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REGULATORS, AUTOMATIC, Draft (See Controllers, Automatic, Draft)

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United Cinephone Corp.

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Atlas Valve Co.
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Brown Inst. Co.
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REGULATORS, AUTOMATIC, Fluid Proportioning (See Controllers, Automatic, Fluid Proportioning)

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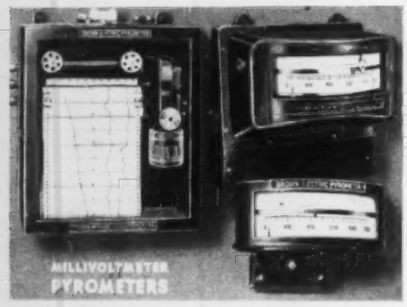
General Elec. Co.
Leeds & Northrup
Warren Telechron Co.
Wheelco Inst. Co.

REGULATORS, AUTOMATIC, Furnace (See Controllers, Automatic, Furnace)



For Controlling, Recording and Indicating Temperatures from 0 to 3000°F.

A direct-reading, simple and sturdy pyrometer, especially suited for industrial applications where simplicity and ruggedness are of greater importance than extreme accuracy. The instrument can be calibrated to compensate for long lengths of extension lead wire between thermocouples and instrument. No dry cells or standard cells required.

Charts and scales for a wide variety of ranges are available, from a minimum temperature span of 800°F. to a maximum span of 3000°F. Corresponding Centigrade scales and charts are also available.

Pyrometer accessories, such as thermocouples and extension lead wire, furnished with instruments to meet the requirements of each job.

Write for Catalog 15-F, THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4482 Wayne Avenue, Philadelphia, Pa.

BROWN PYROMETERS
AND
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS
To Measure and Control is to Economize

REGULATORS

Republic-Smoot regulators are supplied for the automatic control of pressure, rate of flow, speed of rotation, level of a liquid or the proportioning of two pressures, flows, etc., in a fixed ratio by mechanically operating a valve, damper, rheostat or various types of variable speed transmissions.

Republic-Smoot regulators may be either oil or air operated. Their extreme flexibility in application and the degree to which they meet the four requirements of sensitivity, power, speed and stability, had been responsible to a large degree for the outstanding success of Republic-Smoot control systems.

WRITE FOR DATA BOOK No. S-13

REPUBLIC FLOW METERS CO.
2249 DIVERSEY PKWY., CHICAGO, ILLINOIS

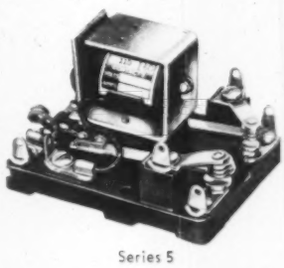
TAG RECORDERS

These instruments are designed to record all temperatures from minus 200°C. up, and all industrial pressures. Ask for Catalogs—They graphically suggest the usefulness of TAG RECORDING THERMOMETERS and RECORDING PRESSURE GAGES for service and economy in your plant.

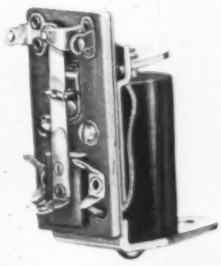
C. J. TAGLIABUE MFG. CO.
Park & Nostrand Avenues, Brooklyn, N. Y.

LOOK INSIDE the COVER (Part 1) *See How* **TAG RECORDERS** *Save You Money* **TAG**

For addresses, see pages 82-91



Series 5



Series 11

KURMAN ELECTRIC CO., Inc.

241-B LAFAYETTE STREET NEW YORK, NEW YORK

RELAYS TEST EQUIPMENT CONTROLS

GUIDE TO KURMAN RELAY SPECIFICATIONS

SERIES	RATED INPUT DC WATTS	RATED INPUT AC V.A.	AMPERE CONTACT RATING	WEIGHT OUNCES	DIMENSIONS INCHES
5	2.5	8.0	15	7 1/2	3x2 1/4 x2 1/4
10	.35	—	.5	1 1/2	1 1/2 x1x1 1/2
11	.80	4.4	1	2 1/2	1 3/4 x 1 1/2 x1 1/2
12	.018	—	.25	1 1/2	1 3/4 x1 1/2 x1 1/2
15	2.0	6.0	1	3 3/4	1 3/4 x1 1/2 x1 3/4
25	2.0	4.0	10	4	2 1/2 x1 3/4 x1 1/2
200	.014	.36	3	6 3/4	2 3/4 x2 3/4 x1 3/4
300	.014	.36	3	6 3/4	2 3/4 x2 3/4 x1 3/4

NOTES

I. All current contact ratings are in amperes at 110 volts 60 cycle AC.

II. Dielectric strength of 1500 volts exists between contacts and ground in Series 10, 11, 15.

III. Insulated armature, shown on Series 300, is recommended for high frequency transfer. This feature may be specified for Series 200.

IV. Ferronickel alloy is used in the magnetic circuits for Series 10, 12, 200, 300.

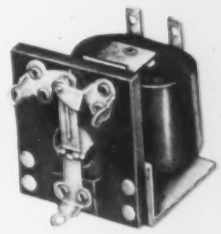
V. Ceramic insulation in Series 25 permits high frequency transfer with low capacitive leakage.

VI. Dampened armature action in Series 25 is designed to reduce contact bounce after initial pull down.

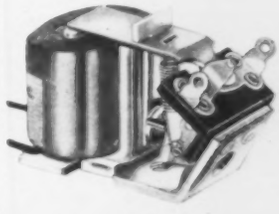
VII. Rated watts represents practical minimum input at standard adjustments.

VIII. AC relays have approximately .5 power factor.

IX. List prices vary with specific voltage and insulation requirements.

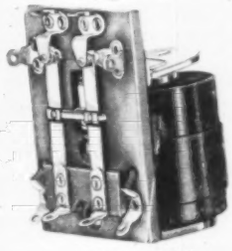


Series 10

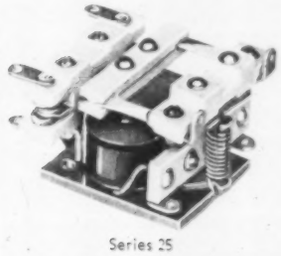


Series 12

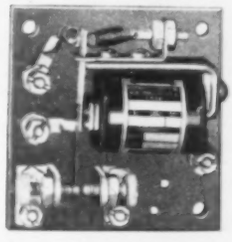
RELAYS DESIGNED TO MEET YOUR SPECIFICATIONS



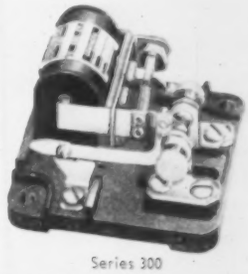
Series 15



Series 25



Series 200



Series 300

REGULATORS, AUTOMATIC, Gas (See Regulators, Automatic, Air)

REGULATORS, AUTOMATIC, Humidity (See Controllers, Automatic, Humidity)

REGULATORS, AUTOMATIC, Liquid Level (See Controllers, Automatic, Liquid Level)

REGULATORS, AUTOMATIC, Load
Allis-Chalmers Mfg. Co.
Autom'c Valve Controller
Hays Corp.
Leeds & Northrup Co.
Taylor Inst. Cos.

REGULATORS, AUTOMATIC, Oil Feed
Askania Regulator Co.
Atlas Valve Co.
Brown Inst. Co.
Cash Co.
D'Este Co.
Fisher Governor
Foster Engg. Co.
General Regulator Corp.
Hagan Corp.
Lammert & Mann Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
McCorkle Co.
National Airoil Burner
Republic Flow Meters
Spence Engineering Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
United Cinephone Corp.
Vaughn-G. E. Witt Co.
Wilgus Manufacturing

REGULATORS, AUTOMATIC, Power Factor
Allis-Chalmers Mfg. Co.
Leeds & Northrup Co.
United Cinephone Corp.

REGULATORS, AUTOMATIC, Pressure (See Controllers, Automatic, Pressure)

REGULATORS, AUTOMATIC, Pump
Allen-Bradley Co.
Area Regulators, Inc.
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Belfield Co.
Boylston Co.
Brown Inst. Co.
(Cont'd)

REGULATORS, AUTOMATIC, Pump (Cont'd)
Builders-Providence
Cash Co.
Davis Reg. Co.
D'Este Co.
Fisher Governor Co.
Ford Reg. Valve Co.
Foster Engg. Co.
Furnas Electric Co.
General Regulator Corp.
Hagan Corp.
Hanlon-Waters, Inc.
Hydraulic Press Co.
Klipfel Mfg. Co.
Leslie Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Mercoid Regulator Co.
Northern Equip. Co.
Penn Electric Switch
Republic Flow Meters
Water Level Controls Co.
Schade Valve Mfg. Co.
Spence Engineering Co.
Tagliabue Mfg. Co.
Vaughn-G. E. Witt Co.
Watts Regulator Co.
Wilgus Mfg. Co.

REGULATORS, AUTOMATIC, Refrigeration (See Controllers, Automatic, Refrigeration)

REGULATORS, AUTOMATIC, RKVA
Allis-Chalmers Mfg. Co.

REGULATORS, AUTOMATIC, Safety Fuel Shut-Off (See Valves, Automatic, Safety Fuel

REGULATORS, AUTOMATIC, Steam Pressure (See Regulators, Automatic, Pressure)

REGULATORS, AUTOMATIC, Synchronizing
Allis-Chalmers Mfg. Co.
Industrial Engr. Corp.
Magnetic Gauge Co.

REGULATORS, AUTOMATIC, Temperature (See Controllers, Automatic, Temperature).

REGULATORS, AUTOMATIC, Time (See Controllers, Automatic, Time)

REGULATORS, AUTOMATIC, Vacuum (See Controllers, Automatic, Vacuum)

REGULATORS, AUTOMATIC, Viscosity (See Controllers, Automatic, Viscosity)

REGULATORS, AUTOMATIC, Voltage
American Transformer
Amperite Corp.
Amplifier Co.
Burlington Inst. Corp.
Clarostat Mfg. Co.
Eclipse Aviation
Electronic Prod. Co.
Ferris Inst. Corp.
Fredericks, George
General Elec. Co.
Ideal Commutr. Dresser
International Resistance
Miller Co., Bertrand F.
Raytheon Mfg. Co.
Sola Electric Co.
United Cinephone Corp.
United Transformer Corp.
Ward Leonard Elec. Co.

REGULATORS, AUTOMATIC, Water Pressure (See Regulators, Automatic, Pressure)

REGULATORS, AUTOMATIC, Welding, Gas
Bastian-Blessing Co.
Victor Equipment Co.

REGULATORS, MANUAL (Non-Automatic)
Allen-Bradley Co.
Bailey Meter Co.
Beck Bros.
Belfield Co.
Brown Inst. Co.
Cutler-Hammer, Inc.
Fisher Governor
Hanlon-Waters, Inc.
McAlear Mfg. Co.
National Airoil Burner
National Elec. Controller
Pioneer Instrument
Superior Electric Co.
Tagliabue Mfg. Co.
United Transformer Corp.
Ward Leonard Elec. Co.

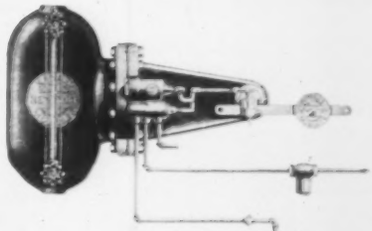
RELAYS, Automatic
Allen-Bradley Co.
American Inst. Co.
American Automatic Elec.
Autocall Co.
Clare & Co.
Cutler-Hammer, Inc.
Eclipse Aviation
General Controls Co.
General Elec. Co.
(Cont'd)

Kieley & Mueller PRODUCTS

63rd YEAR

A complete range of sizes and types in

Valves
Regulators
Liquid Level Controls
Strainers
Steam Traps
and
Engineering Specialties



Custom Sub-assemblies for all Valve Requirements

KIELEY & MUELLER, INC.

General Offices—40 West 13th St., N. Y. C.

Factory at Newark, N. J.

YOUR CONTROL ENGINEERS

For addresses, see pages 82-91

RELAYS, Automatic (Cont'd)
Guardian Elec. Mfg. Co.
Hagan Corp.
Industrial Eng. Corp.
Industrial Timer Corp.
Kellogg Switchboard
Mercoid Corp.
Minneapolis-Honeywell
Monitor Controller Co.
Paragon Electric Co.
Penn Electric Switch
Perfex Corp.
Roller-Smith Co.
Struthers-Dunn
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

RELAYS, Capacity-Operated
Electronic Lab.
Luxtrol Co., Inc.

RELAYS, Circuit Control
Advance Electric Co.
Allen-Bradley Co.
American Automatic Elec.
American Inst. Co.
Autocall Co.
Automatic Switch Co.
Brown Inst. Co.
Clare & Co.
Electric Controller
Friez & Sons
General Elec. Co.
Guardian Elec. Mfg. Co.
H-B Electric
Industrial Timer Corp.
Kellogg Switchboard
Leach Relay Co.
Lumenite Elec. Co.
Miller Co., Bertrand F.
Minneapolis-Honeywell
Monitor Controller Co.
Paragon Electric Co.
Roller-Smith Co.
Sigma Instruments, Inc.
Struthers-Dunn
United Cinephone Corp.
Ward Leonard Elec. Co.
Western Electro-Mech.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

RELAYS, Continuous Current
Allen-Bradley Co.
American Automatic Elec.
American Inst. Co.
Autocall Co.
Clare & Co.
General Elec. Co.
(Cont'd)

RELAYS, Continuous Current (Cont'd)
Guardian Elec. Mfg. Co.
H-B Electric
Industrial Timer Corp.
Kellogg Switchboard
Paragon Electric Co.
Struthers-Dunn
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

RELAYS, Control
Allen-Bradley Co.
Advance Electric Co.
American Automatic Elec.
American Inst. Co.
Autocall Co.
Automatic Switch Co.
Barber-Coleman
Betts & Betts
Brown Inst. Co.
Clare & Co.
Cutler-Hammer, Inc.
Electric Controller
Friez & Sons
General Controls Co.
General Elec. Co.
Guardian Elec. Mfg. Co.
Hagan Corp.
H-B Electric
Industrial Eng. Corp.
Kellogg Switchboard
Miller Co., Bertrand F.
Minneapolis-Honeywell
Monitor Controller Co.
National Time & Signal
Perfex Corp.
Precision Therm.
Roller-Smith Co.
Struthers-Dunn
United Cinephone Corp.
Ward Leonard Elec. Co.
Western Electro-Mech.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

RELAYS, Demand Totalizing
Autocall Co.
General Elec. Co.
Hagan Corp.
Therm-Electric Meters Co.
United Cinephone Corp.
Westinghouse Elec. & Mfg.

RELAYS, Electromagnetic
Advance Electric Co.
Allen-Bradley Co.
American Automatic Elec.
American Inst. Co.
Autocall Co.
(Cont'd)

RELAYS, Electromagnetic (Cont'd)
Automatic Switch Co.
Bender Warrick
Bunnell & Co.
Eby, Inc.
Clare & Co.
Cutler-Hammer, Inc.
Friez & Sons
General Elec. Co.
G-M Labs.
Guardian Elec. Mfg. Co.
H-B Electric
Industrial Eng. Corp.
Kellogg Switchboard
Kurman Electric Co.
Leach Relay Co.
Miller Co., Bertrand F.
Minneapolis-Honeywell
Monitor Controller Co.
National Time & Signal
Penn Electric Switch Co.
Perfex Corp.
Phila. Thermometer Co.
Precision Therm. & Inst.
Sigma Instruments, Inc.
Struthers-Dunn
United Cinephone Corp.
Ward Leonard Elec. Co.
Western Electro-Mech.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
White-Rodgers Electric
Zenith Electric Co.

RELAYS, Frequency
Autocall Co.
Clare & Co., C. P.
Cutler-Hammer, Inc.
Esterline-Angus Co.
Hickok Electrical Inst.
United Cinephone Corp.
Ward Leonard Electric Co.
Westinghouse Elec. & Mfg.

RELAYS, Galvanometer
Autocall Co.
Eby, Inc., Hugh H.
G-M Laboratories, Inc.
Roller-Smith Co.
Rubicon Co.
Tagliabue Mfg. Co., C. J.

RELAYS, Heavy Duty
Allen-Bradley Co.
American Automatic Elec.
American Inst. Co.
Autocall Co.
Automatic Switch Co.
Cutler-Hammer, Inc.
General Elec. Co.
H-B Electric
Miller Co., Bertrand F.
Monitor Controller Co.
Penn Electric Switch
Philadelphia Thermometer
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.
Zenith Electric Co.

RELAYS, Instrument Controlled
American Automatic Elec.
American Inst. Co.
Autocall Co.
Brown Inst. Co.
Clare & Co.
Cramer & Co., Inc.
Friez & Sons
General Elec. Co.
Guardian Elec. Mfg. Co.
H-B Electric
Kurman Electric Co.
Minneapolis-Honeywell
Perfex Corp.
Phila. Thermometer Co.
Precision Therm.
Roller-Smith Co.
Struthers-Dunn
Tagliabue Mfg. Co.
Triplett Electrical Inst.
United Cinephone Corp.
Ward Leonard Elec. Co.
Weston Elec. Inst. Corp.

RELAYS, Light Sensitive (See Photoelectric below)

RELAYS, Magnetic (See Relays, Electro-Magnet)

RELAYS, Mercury
American Automatic Elec.
American Inst. Co.
Autocall Co.
Continental Elec. Co.
Guardian Electric
H-B Elec. Co., Inc.
Precision Therm.
Weston Elec. Inst. Corp.

RELAYS, Mercury Tube
American Inst. Co.
Autocall Co.
Brown Inst. Co.
Clare & Co.
General Controls Co.
G-M Labs.
Guardian Elec. Mfg. Co.
H-B Elec. Co., Inc.
Minneapolis-Honeywell
Phila. Thermometer
Precision Therm.
Struthers-Dunn
Ward Leonard Elec. Co.
Weston Elec. Inst. Corp.

RELAYS, Motor Driven Time Delay
Advance Electric Co.
American Inst. Co.
Betts & Betts
Controls, Inc.
Cramer & Co., Inc.
Struthers Dunn
Friez & Sons
General Elec. Co.
Industrial Eng. Corp.
Industrial Timer
Monitor Controller Co.
Paragon Electric Co.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
Zenith Electric Co.

RELAYS, Movable Coil A.C.
Esterline-Angus Co.
General Elec. Co.
Roller-Smith Co.
Weston Elec. Inst. Corp.

RELAYS, Overload
Allen-Bradley Co.
Autocall Co.
Bunnell & Co.
Burlington Inst. Corp.
Cutler-Hammer, Inc.
Edison Electrical Controls
Electric Controller
General Elec. Co.
Guardian Elec. Mfg. Co.
Leach Relay Co.
Penn Electric Switch
Roller-Smith Co.
Standard Elect. Prods.
Struthers-Dunn
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.

RELAYS, Permanent Magnet Movable Coil
Bunnell & Co.
Esterline-Angus Co.
General Elec. Co.
Roller-Smith Co.
Triplett Electrical Inst.
Weston Elec. Inst. Corp.

RELAYS, Photoelectric
Advance Electric Co.
American Inst. Co.
Eby, Inc.
Clare & Co.
Continental Elec. Co.
Cutler-Hammer, Inc.
Dickson Co.
Electronic Lab.
Electronic Prod. Co.
Ess Instrument Co.
General Controls Co.
General Elec. Co.
G-M Labs.
Leach Relay Co.
Lipman Engg. Co.
Lumenite Elec. Co.
Photobell Corp.
Photoswitch, Inc.
Precision Therm.
Rehtron Corp.
Rubicon Co.
Sigma Instruments, Inc.
Tagliabua Mfg. Co.
United Cinephone Corp.
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Ins. Corp.

RELAYS, Polarized
American Automatic Elec.
Autocall Co.
Edison Electrical Controls
L. A. B. Corp.
Miller Co., Bertrand F.
Precision Therm. & Inst.
Struthers-Dunn
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

RELAYS, Power
American Automatic Elec.
American Inst. Co.
Automatic Switch Co.
Esterline-Angus Co.
General Controls Co.
General Elec. Co.
Hagan Corp.
Roller-Smith Co.
Struthers-Dunn
Ward Leonard Elec. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

RELAYS, Power Factor
Esterline-Angus Co.
L. A. B. Corp.
Westinghouse Elec. & Mfg.

RELAYS, Resistance, D-c.
Advance Electric Co.
Autocall Co.
Automatic Electric Co.
Bunnell & Co.
Clare & Co., C. P.
Cutler-Hammer, Inc.
Dunn, Inc., Struthers
Guardian Electric
Leach Relay Co.

RELAYS, Stepping
Autocall Co.
Automatic Electric Co.
Dunn, Inc., Struthers
G-M Laboratories, Inc.
Guardian Electric
Roller-Smith Co.

RELAYS, Telephone Auxiliary Ringing
Advance Electric Co.
American Automatic Elec.
Autocall Co.
Clare & Co.
Kellogg Switchboard
Kurman Electric Co.
Leach Relay Co.
Struthers-Dunn
Western Electro-Mech.

RELAYS, Temperature
Autocall Co.
Clare & Co., C. P.
Dunn, Inc., Struthers
Edison Electrical Controls
Friez & Sons
Gleason-Avery, Inc.
G-M Laboratories, Inc.
Guardian Electric
Leach Relay Co.
Minneapolis-Honeywell
Photobell Corp.
Spencer Thermostat Co.
Tagliabue Mfg. Co., C. J.
United Cinephone Corp.
Westinghouse Elec. & Mfg.
Weston Electrical Inst.

RELAYS, Thermal Time Delay
Advance Electric Co.
Allen-Bradley Co.
American Automatic Elec.
Am. Gas Accumulator
American Inst. Co.
Autocall Co.
Automatic Temp. Control
Betts & Betts
Cramer & Co., Inc.
Cutler-Hammer, Inc.
Eagle Signal Corp.
Edison Electrical Controls
Electric Controller
Electronic Prod. Co.
Friez & Sons, Jr.
General Elec. Co.
Guardian Elec. Mfg. Co.
Industrial Eng. Corp.
Magnetic Gauge Co.
Paragon Electric Co.
Perfex Corp.
Photobell Corp.
Precision Therm.
Preferred Utilities Mfg.
Roller-Smith Co.
Spencer Thermostat Co.
Struthers-Dunn
Ward Leonard Elec. Co.
(Cont'd)

RELAYS, Thermal Time Delay (Cont'd)
Weston Elec. Inst. Corp.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
White-Rodgers Electric
Zenith Electric Co.

RELAYS, Time Delay (See Relays, Thermal Time Delay)

RELAYS, Transformer (Low Voltage)
Allen-Bradley Co.
Eclipse Aviation
Friez & Sons
General Controls Co.
Gleason-Avery, Inc.
Guardian Elec. Mfg. Co.
H-B Electric
Industrial Eng. Corp.
Miller Co., Bertrand F.
Minneapolis-Honeywell
Paragon Electric Co.
Penn Electric Switch
Perfex Corp.
Sigma Instruments, Inc.
Struthers-Dunn
Ward Leonard
Westinghouse Elec. & Mfg.
White-Rodgers Electric

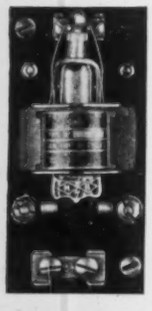
RELAYS, Vacuum Contact
American Automatic Elec.
American Inst. Co.
Edison Electrical Controls

RELAYS, Vacuum Tube
American Inst. Co.
Continental Elec. Co.
Eby, Inc.
Electro-Medical Lab.
Electronic Prod. Co.
General Controls Co.
General Elec. Co.
G-M Labs.
L. A. B. Corp.
Lumenite Elec. Co.
Photobell Corp.
Precision Therm.
Sargent & Co.
Sigma Instruments
Struthers-Dunn
Tagliabue Mfg. Co.
United Cinephone Corp.

AC RELAY

. . . IT'S AVAILABLE TODAY FROM STOCK

MERCURY TO MERCURY BREAK
MAINTENANCE FREE—DUST PROOF



This accurate unit has been tested to 10 million operations without a failure. Available up to 30 amps. or one horse power rating. It will operate within 45 degrees of vertical. Bulletin B gives full details; write for it today.

H-B ELECTRIC CO., Inc.
Manufacturers of H B Electrical Devices
2519 NO. BROAD ST., PHILADELPHIA, PA.

AGASTAT

The Name for TIME-DELAY RELAY

An instantaneous recycling unit giving a delay interval ranging from a fraction of a second to several minutes, for use in electrical apparatus and equipment.

Positive, snap-action contacts, normally open, normally closed, or both. Single or double-pole. Offers a diversity of timing effects by different circuit combinations. Simple field adjustment. Unaffected by dust, temperature, humidity or voltage fluctuations.

Write Today for Bulletin N-4.

AMERICAN GAS ACCUMULATOR CO.
Electrical Division
ELIZABETH • NEW JERSEY

For addresses, see pages 82-91

RELAYS, Voltage
Advance Electric Co.
Allen-Bradley Co.
Autocall Co.
Automatic Switch Co.
Clare & Co., C. P.
Cutler-Hammer, Inc.
Dunn, Inc., Struthers
Eby, Inc., Hugh H.
Esterline-Angus Co.
Ferranti Electric, Inc.
Hart Manufacturing Co.
Hathaway Inst. Co.
Leach Relay Co.
Photobell Corp.
Reliance Instrument Co.
Roller-Smith Co.
Ward Leonard Electric Co.
Triplett Electrical Inst.
Westinghouse Elec. & Mfg.
Weston Electrical Inst.

REMOTE-CONTROL EQUIPMENT
Allen-Bradley Co.
American Automatic Elec.
Arca Regulators, Inc.
Askania Regulator Co.
Atlas Valve Co.
Autocall Co.
Bailey Meter Co.
Bristol Co.
Brooke Eng., Co.
Brown Inst. Co.
Builders Providence
Clare & Co.
Control Corp.
Cutler-Hammer, Inc.
Davis Reg. Co.
Elec. Indicator Corp.
Electrimatic Corp.
Electronic Lab.
Elsbert Mfg. Co.
Fischer & Porter
Foxboro Co.
General Elec. Co.
Guardian Electric
Hagan Corp.
Hanlon-Waters, Inc.
Hart Mfg. Co.
Hays Corp.
H-B Electric
Illinois Eng. Co.
International Filter Co.
Kollsman Inst. Co.
Kurman Electric Co.
Mason-Neilan Regulator
Minneapolis-Honeywell
Perfex Corp.
Photobell Corp.
Pioneer Instrument
Powers Regulator Co.
Republic Flow Meters
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
United Cinephone Corp.
Zenith Electric Co.

REMOTE-METERING EQUIPMENT, ELECTRICAL
Andrew, Victor J.
Automatic Temp. Control
Bristol Co.
Brown Inst. Co.
Builders-Providence
Control Corp.
Elec. Indicator Corp.
Elec. Tachometer Corp.
Esterline-Angus Co.
Fischer & Porter
Foxboro Co.
General Elec. Co.
W. & L. E. Gurley
Kellogg Switchboard
Kurman Electric Co.
L. A. B. Corp.
Leeds & Northrup Co.
Mason-Neilan Regulator
Moisture Register Co.
Morey & Jones, Ltd.
Pioneer Instrument
Republic Flow Meters
Tagliabue Mfg. Co.
Therm-Electric Meters
Westinghouse Elec. & Mfg.

REMOTE-METERING EQUIPMENT, HYDRAULIC
Builders-Providence
International Filter Co.
Leupold, Volpel & Co.
Westinghouse Elec. & Mfg.

REMOTE-METERING EQUIPMENT, PNEUMATIC
American Meter Co.
Bristol Co.
Brown Inst. Co.
Builders-Providence
Foxboro Co.
Mason-Neilan Regulator
Taylor Inst. Cos.

RESISTANCE LOADING EQUIPMENT
Eastern Specialty Co.
Hardwick, Hindle, Inc.
International Resistance.
Precision Resistor Co.
Shallcross Mfg.
Ward Leonard

RESISTANCES
Allen-Bradley Co.
Beck Bros.
Central Scientific Co.
Clarostat Mfg. Co.
Cutler-Hammer, Inc.
Daven Co.
General Radio Co.
Instrument Resistors,
International Resistance
Mallory & Co.
(Cont'd)

RESISTANCES (Cont'd)
Ohmite Mfg. Co.
Precision Resistor Co.
Rubicon Co.
Sensitive Research Inst.
Shallcross Mfg. Co.
Ward Leonard

RESISTORS, Adjustable
Mallory & Co.
Ward Leonard Electric Co.

RESISTORS, Carbon Compression
Allen Bradley Co.
Beck Bros.
International Resistance
Le Carbone Co., Inc.
Nat'l Carbon Co., Inc.
Ohio Carbon Co.
O. S. Peters
Speer Carbon Co.
Welch Mfg. Co.

RESISTORS, High Frequency
Beck Bros.
Daven Co.
General Radio Co.
Hardwick, Hindle, Inc.
Instrument Resistors, Inc.
International Resistance
Leeds & Northrup Co.
Mallory & Co.
Measurements Corp.
Ohmite Mfg. Co.
Shallcross Mfg. Co.
Ward Leonard Electric Co.

RESISTORS, High Voltage
Beck Bros.
Clarostat Mfg. Co.
Hardwick, Hindle, Inc.
Instrument Resistors, Inc.
International Resistance
J B L Instrument Co.
Ohmite Mfg. Co.
Shallcross Mfg. Co.
Ward Leonard Electric Co.

RESISTORS, Manganin
Beck Bros.
Daven Co.
General Radio Co.
Gray Instrument Co.
Hardwick, Hindle, Inc.
Instrument Resistors, Inc.
Leeds & Northrup Co.
Rubicon Co.
Shallcross Mfg. Co.

RESISTORS, Molded
Allen-Bradley Co.
Beck Bros.
Clarostat Mfg. Co.
International Resistance
Mute Co.
Triplett Electrical Inst.

RESISTORS, Standard (See Standards, Resistance)

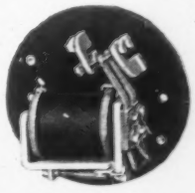
RELAYS by GUARDIAN

. . . for AC or DC Operation—

★Relays—Solenoids and Stepping Switches illustrated below suggest a few of the numerous types of Electrical Control Units obtainable at Guardian Electric, in both industrial and *Government Approved* types.

If you need COMPACT and highly sensitive controls that possess quick responsiveness and precision of action—with MAXIMUM CONTROL in *minimum space*—you will get it ALL at Guardian. Controls by Guardian are furnished to operate on any specified voltage up to 220 DC—440 AC—and on any current from .5 milliamperes to 30 amperes. Contact capacities to 1000 amperes, intermittent D.C.

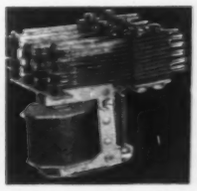
DIRECT CURRENT RELAYS



Series 5 DC (left) Current draw as low as .009 watts—furnished completely enclosed—contact limit, double pole, double throw. Size 2¾x3¼x2"

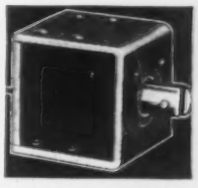
Series 115 DC (right) Four pole, double throw contact capacity, rapid change over of contacts, full floating, permanently locked armature, economical of space and cost.

ALTERNATING CURRENT RELAYS



SERIES 30 AC (left) Supplied in three types of mountings, voltage range .1 to 440 volts, contact capacity 42 contacts. Size 2¾x1½x2½"

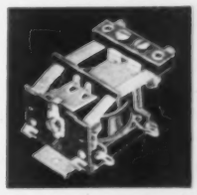
SOLENOIDS AC—DC



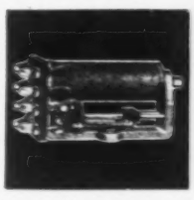
Type No. 2 Efficient—powerful—compact. For electro-mechanical operations involving remote control of mechanical motions such as electric counting, valve control and operation, faulty material ejection, automatic brake, electric ratcheting, etc. Size 1½x1½x1⅝".

GOVERNMENT APPROVED RELAYS

Series 185 Relay (left) Contact capacity 100 watts. Switch capacity double pole, double throw. Maximum coil resistance 3,000 Ohms. Vibration resistant. Specified where weight and size are of utmost importance, as in aircraft. Weight ⅜ oz. Size 15/16" Dia x1¼"L. Available DC only.

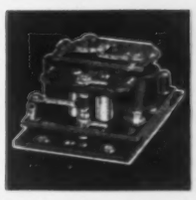


Series 165-24v. Vibration Resistant Relay (right). Contact combinations up to 10 double pole, double throw, with contact capacity up to 12.5 amp. per pole, non-inductive AC. Overall dimensions: 2⅝x1-9/16x1⅝". Weight 1 DPST contacts: 3 oz. Available DC only.



BK-10 RELAY (left) Precisely counter-balanced to resist extreme vibrations. Built to rigid U.S. Signal Corps specifications.

BK-16 RELAY (right) Built to minimum tolerances. A production line product. Furnished to custom-built specifications. Another U.S. Signal Corps Relay by Guardian.

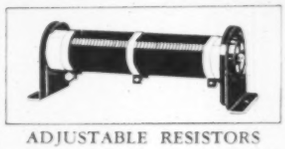


★ **WRITE TO GUARDIAN** for free engineering assistance on any electrical control problem. No obligation. Ask for Catalog L, with illustrations and specifications on the complete Guardian line.

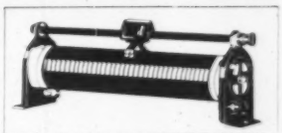
GUARDIAN ELECTRIC
1621 West Walnut Street Chicago, Illinois
LARGEST LINE OF RELAYS SERVING AMERICAN DEFENSE INDUSTRY

Rex Rheostat Co.

3 FOXHURST ROAD, BALDWIN, L. I., N. Y.



ADJUSTABLE RESISTORS
with and without protective housing. Cemented with heat, oil, acid and solvent resisting cement. 6 sizes — from 220 up to 1000 watt.



SLIDE-CONTACT RHEOSTATS
with and without protective housing. Laminated contact brush with *self-lubricating contacts*. 6 sizes — 120 different units. From .33 to 40,000 Ohms, from .08 to 25 Amps.

PROTECTED RHEOSTATS
protect the user and the rheostat. No tilting and dragging of the slider. Smooth operation. Accurate adjustment.

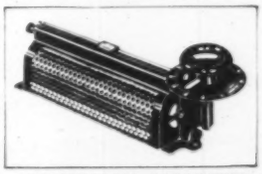
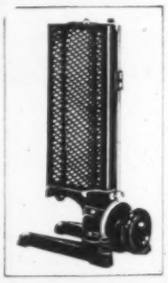
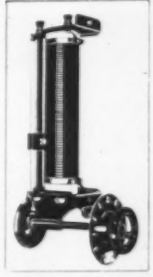


TABLE ROTARY DRIVE RHEOSTATS
with and without protective housing. No back lash. Angle of rotation: 330 deg. With dial. 2 sizes — 500 and 825 Watt.



VERTICALLY MOUNTED RHEOSTATS
with or without rotary drive, with or without protective housing.

ROTARY DRIVE RHEOSTATS
for switchboard mounting with or without protective housing. Cemented winding. Space saving design. Good heat dissipation. No back lash. Angle of rotation: 330 deg. Single Units—500 and 825 Watts. Double Units — 1000 and 1650 Watt.
Catalog upon request



For addresses, see pages 82-91

Ohmite is ready for the job ahead. Expanded factory facilities are operating day and night with increased momentum to produce more units, more quickly for Industry and the Armed Forces, for the planes, tanks, ships and other equipment the Nation needs for Victory.

The design and construction of Ohmite Rheostats, Resistors, Chokes and Tap Switches insure utmost dependability. The wide variety and extensive range of types and sizes in stock or special units make it easier to answer your exact needs. Ohmite engineers are glad to help you.

Send for 96-page Catalog and Engineering Manual No. 40.

Most complete, helpful guide in the selection and application of resistance units. Write on company letterhead for your copy.

OHMITE MANUFACTURING CO. ★ 4886 Flournoy St., Chicago, U. S. A.

OHMITE *Marches with the Nation!*

RESISTORS, Variable
Allen-Bradley Co.
Beck Bros.
Clarostat Mfg. Co.
Cutler-Hammer, Inc.
General Radio Co.
Gray Instrument Co.
Hardwick, Hindle, Inc.
Instrument Resistors, Inc.
International Resistance
Leeds & Northrup Co.
Mallory & Co.
National Electric Control.
Ohmite Mfg. Co.
Rex Rheostat Co.
Rubicon Co.
Shallcross Mfg.

RESISTORS, Wire Wound
Beck Bros.
Biddle Co., Jas. G.
Clarostat Mfg. Co.
Cutler-Hammer, Inc.
Daven Co.
General Radio Co.
Gray Instrument Co.
Hardwick, Hindle, Inc.
Instrument Resistors, Inc.
International Resistance
Leeds & Northrup Co.
Mallory & Co.
Muter Co.
National Electric Control.
Ohmite Mfg. Co.
Rex Rheostat Co.
Rubicon Co.
Shallcross Mfg. Co.
Triplett Electrical Inst.
Ward Leonard Electric Co.

RHEOSTATS, Battery Charging
Allen-Bradley Co.
Beck Bros.
Cutler-Hammer, Inc.
Hardwick, Hindle, Inc.
International Resistance
National Elec. Controller
Ohmite Mfg. Co.
Rex Rheostat Co.
Schaefer Bros. Co.
Ward Leonard Elec. Co.

RHEOSTATS, Laboratory
Allen-Bradley Co.
American Inst. Co.
Beck Bros.
Biddle Co., Jas. G.
De Jur-Amsco Corp.
Central Scientific Co.
Chicago Apparatus Co.
Eastern Specialty Co.
General Radio Co.
G-M Labs.
Hardwick, Hindle, Inc.
Mallory & Co.
National Elec. Controller
Ohmite Mfg. Co.
Rex Rheostat Co.
Rubicon Co.
Schaefer Bros. Co.
Ward Leonard Elec. Co.

RHEOSTATS, Meter Testing
Allen-Bradley Co.
Beck Bros.
Biddle Co., Jas. G.
De Jur-Amsco Corp.
Eastern Specialty Co.
Hardwick, Hindle, Inc.
International Resistance
Leeds & Northrup
National Elec. Controller
Shallcross Mfg.
Ward Leonard Elec. Co.

RHEOSTATS, Slide Wire
Beck Bros.
Biddle Co., Jas. G.
Central Scientific Co.
Chicago Apparatus Co.
General Radio Co.
Hardwick, Hindle, Inc.
G-M Labs.
Leeds & Northrup
National Elec. Controller
Rex Rheostat Co.
Rubicon Co.
Shallcross Mfg. Co.
Ward Leonard Elec. Co.

RIDEOMETERS. RIDE COMFORT Recorders & Riding-Quality Instruments
Commercial Engg. Labs.
Impact Register Co.
Jaeger Watch Co.
Sperry Products, Inc.
Waugh Laboratories

RULES, Adjustable Curve (See Drawing Instruments)

RULES, Aluminum
Keuffel & Esser Co.
Lufkin Rule Co.
Warren-Knight Co.

RULES, Brass
Bliss & Co.
Lufkin Rule Co.
Mico Instrument Co.
Starrett Co.
Warren-Knight Co.

RULES, Caliper
Glogau & Co.
Lufkin Rule Co.
Millers Falls Co.
Starrett Co.
Union Tool Co.
Warren-Knight Co.

RULES, Drafting Room (See Drawing Instruments)

RULES, Folding
Bliss & Co.
Dietzen Co.
Keuffel & Esser Co.
Lufkin Rule Co.
(Cont'd)

RULES, Folding (Cont'd)
Post Co., Frederick
Speidel & Co.
Starrett Co.
Warren-Knight Co.
Weber Co.

RULES, Glass
Fish-Schurman Co.
Glass Engraving Co.
Mico Instrument Co.

RULES, Parallel
Bliss & Co.
Dietzen Co.
Hamilton Mfg. Co.
Keuffel & Esser Co.
Negus, T. S. & J. D.
Speidel & Co.
Warren-Knight Co.
White Co., Inc.
Weber Co.

RULES, Precision Standard
Gaertner Scientific Corp.

RULES, Shrinkage
Keuffel & Esser Co.
Lufkin Rule Co.
Speidel & Co.
Starrett Co.
Warren-Knight Co.
Weber Co.

RULES, Slide (See Drawing Instruments)

RULES, Slide, Psychrometric
Friez & Sons

RULES, Steel
Kern Co.
Keuffel & Esser Co.
Lufkin Rule Co.
Mico Instrument Co.
Millers Falls Co.
Scherr Co., Inc.
Speidel & Co.
Starrett Co.
Union Tool Co.
Warren-Knight Co.
Weber Co.

RULES, Wood
Henschel & Co.
Keuffel & Esser Co.
Lufkin Rule Co.
Post Co., Frederick
Speidel & Co.
Warren-Knight Co.
Weber Co.

RUNNING TIME TOTALIZERS
Cramer & Co., Inc.
Elec. Tachometer Corp.
Jaeger Watch Co.
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Bausch & Lomb Opt.
Central Scientific Co.
Eimer & Amend
Moeller Instrument Co.
Rieker Inst. Co.
Sargent & Co.
Trerice Co.

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Eimer & Amend
Fleischhauer & Son
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H.B Inst. Co.
Kimble Glass Co.
Moeller Instrument Co.
Precision Therm. & Inst.
Rascher & Betzold
Rieker Inst. Co.
Ruehfel Co.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Wagner & Son

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Bendix Marine Products
Central Scientific Co.
Eimer & Amend
Engineering Labs., Inc.
Fleischhauer & Son
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H-B Inst. Co.
Leeds & Northrup Co.
McNab of Bridgeport
Moeller Inst. Co.
Precision Therm. & Inst.
Rascher & Betzold
Rubicon Co.
Ruehfel Co.
Schultheis Corp.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.
Westinghouse Elec. & Mfg.

SALINOMETERS (See Salinity Indicators)

SAMPLER, Boiler Water
Natl. Aluminate Corp.

SAMPLERS, Oil
Braun Corp.
Central Scientific Co.
Pgh. Equitable Meter
Refinery Supply Co.
Scientific Glass Apparatus
Tagliabue Mfg. Co.

SAMPLERS, Oil Bottom-hole
Ruska & Co., Inc.

SAMPLERS, Sewage
Builders-Providence
Central Scientific Co.
International Filter Co.
Scientific Glass Apparatus

SAMPLERS, Silt
Central Scientific Co.

SCALES (See also object of measurement)

SCALES, Antimony Test
Howe Scale Co.
Seederer-Kohlbusch, Inc.
Troemner, Henry

FISCHER & PORTER

Stabl - Vis Rotameter

FOR VISCOUS FLUIDS

The calibration of this amazing new rotameter is independent of normal viscosity variations in the fluid for which it is calibrated.

It accurately measures flow rates of viscous fluids such as sulphuric acid, concentrated caustics, oils and organic solutions without use of complicated correction factors or automatic temperature controls.

Available in all materials, and types such as indicating, recording, controlling.

Send for Bulletin 80-A

FISCHER & PORTER CO.
23 COUNTY LINE ROAD
HATBORO PENNSYLVANIA

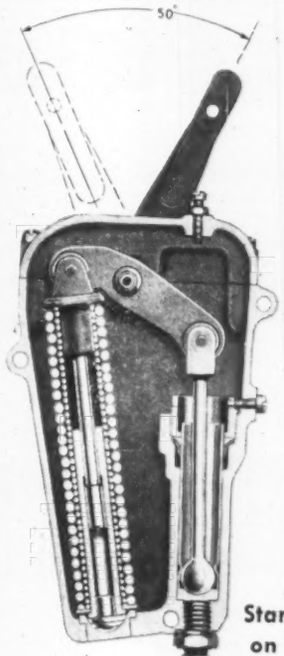
For addresses, see pages 82-91

REMOTE CONTROL

Sperry's

HYDRAULIC "EXACTOR CONTROL"

assures
the smallest movement being
transmitted over long distances
without backlash
Installation simple and rapid

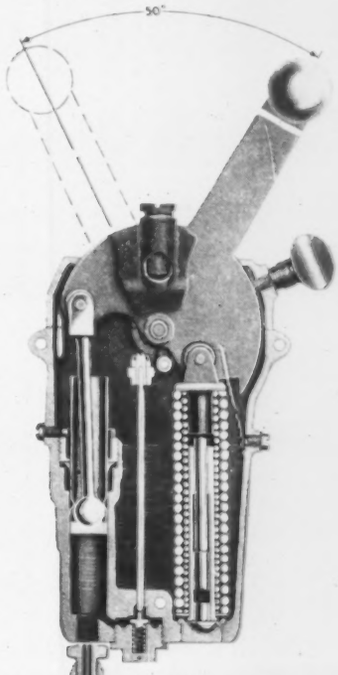


RECEIVER

Standard on U. S. Army Air Corps Test Stands

Single 1/4" Tube

SINGLE TUBE REPLACES:
Cables, Turnbuckles
Pulleys, Bellcranks
Push Rods, etc.



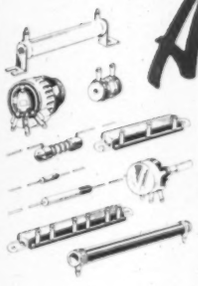
Bulletin on Request

TRANSMITTER

Easily bent around obstructions

SPERRY PRODUCTS, INC.
Willow Ave., Hoboken, N. J.

RESISTOR PROBLEMS *Answered!*



With quality and dependability as prime considerations, IRC engineers are constantly supplying a resistance engineering service of inestimable value to many manufacturers. This service, backed by the world's most complete line of fixed and variable resistance units, is yours for the asking. Bulletins free on any of the following types:

- 2 sizes Variable Metallized Controls
- 4 sizes Insulated Metallized Resistors
- 10 sizes High Frequency Metallized Resistors (1/3 to 150 watts)
- 4 sizes Ultra-High Range Metallized Resistors
- 3 sizes All-Metal Power Rheostats (2 to 50 watts)
- 2 sizes Attenuators
- 7 sizes Insulated Wire Wound Resistors (1/2 to 20 watts)
- 5 sizes High Voltage Metallized Resistors
- 5 sizes Metallized Suppressors
- 12 sizes Precision Wire Wound Resistors
- 53 sizes Fixed and Variable Power Wire Wound Resistors

INTERNATIONAL RESISTANCE COMPANY
417 N. Broad St., Phila., Pa.

IRC

DeJUR-AMSCO
FOR DEPENDABLE POWER RHEOSTATS

Other DeJur products for National Defense: Electrical Instruments, Aircraft Instruments, Aircraft Accessories, Exposure Meters, Photographic Enlargers, Potentiometers. (All defense inquiries invited.)

DeJur Rheostats are available in single or multiple combination units and resistances .5 to 100,000 ohms in single, dual or multiple units. (Write Dept. R A I for further information.)

DeJUR-AMSCO CORPORATION
SHELTON, CONNECTICUT

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SCALES, Automatic
Automatic Scale Co.
Buffalo Scale Co.
Chatillon & Sons
Exact Weight Scale
Fairbanks, Morse & Co.
Gump Co.
Howe Scale Co.
International Bus. Mach.
Jacobs Bros. Co., Inc.
Kron Co.
Merrick Scale Mfg. Co.
Richardson Scale Co.
Schaffer Poidometer Co.
Streeter-Amet Co.
Toledo Scale Co.
Triangle Package Mach.
Triner Sales Co.

SCALES, Bag Filling
Automatic Scale Co.
Exact Weight Scale Co.
Fairbanks, Moore & Co.
Gump Co.
Jacobs Bros. Co.
Kron Co.
Richardson Scale Co.
Toledo Scale Co.
Triangle Package Mach.

SCALES, Basis Weight
Amthor Testing Inst. Co.
Becker, Inc., Christian
Buffalo Scale Co.
Exact Scale Co.
Howe Scale Co.
Kron Co.
Seederer-Kohlbusch
Thwing-Albert Instrument
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.

SCALES, Bulk Weighing
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Jacobs Bros. Co.
Kron Co.
Merrick Scale Mfg.
Richardson Scale Co.
Schaffer Poidometer Co.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.
Triangle Package Mach.
Triner Sales Co.
Troemner, Henry

SCALE, Cement Batching
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Richardson Scale Co.
Streeter-Amet Co.
Toledo Scale Co.
Triner Sales Co.

SCALES, Checking
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Jacobs Bros. Co., Inc.
Kron Co.
Merrick Scale Mfg. Co.
Richardson Scale Co.
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.

SCALES, Classifying
Exact Weight Scale Co.
Jacobs Bros. Co., Inc.
Kron Co.
Toledo Scale Co.
Triner Sales Co.

SCALES, Computing
Amthor Testing Inst.
Exact Weight Scale
International Bus. Mach.
Jacobs Bros., Inc.
Toledo Scale Co.
Triner Sales Co.

SCALES, Continuous Weighing
Buffalo Scale Co.
Builders-Providence
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Gump Co.
Jacobs Bros. Co.
Jeffrey Mfg. Co.
Kron Co.
Merrick Scale Mfg. Co.
Richardson Scale Co.
Schaffer Poidometer Co.
Streeter-Amet Co.
Toledo Scale Co.
Triangle Package Mach.
United Cinephone Corp.

SCALES, Conveyor
Builders-Providence
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
International Bus. Mach.
Kron Co.
Merrick Scale Mfg. Co.
Richardson Scale Co.
Schaffer Poidometer Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Counting
Amthor Testing Inst. Co.
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
International Bus. Mach.
Jacobs Bros. Co.
Kron Co.
Seederer-Kohlbusch
Toledo Scale Co.
Triner Sales Co.
United Cinephone Corp.

SCALES, Crane
Buffalo Scale Co.
Chatillon & Sons
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.

SCALES, Dairy
Becker, Inc., Christian
Buffalo Scale Co.
Central Scientific Co.
Chatillon & Sons
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Humboldt Mfg. Co.
International Bus. Mach.
Jacobs Bros. Co.
Kron Co.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.
Troemner, Henry

SCALES, Differential
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Jacobs Bros. Co., Inc.
Kron Co.
Thwing-Albert Instrument

SCALES, Drawing (See Drawing Instruments)

SCALES, Dump
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Toledo Scale Co.

SCALES, Dynamometer
Central Scientific Co.
Chatillon & Sons
Dillon & Co.
Exact Weight Scale
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Martin Decker Corp.
Seederer-Kohlbusch, Inc.
Toledo Scale Co.

SCALES, Estimating
Exact Weight Scale Co.
Jacobs Bros. Co.
Seederer-Kohlbusch, Inc.
Troemner, Henry

SCALES, Grain & Seed Testing
Amthor Testing Inst. Co.
Automatic Scale Co.
Becker, Inc., Christian
Buffalo Scale Co.
Central Scientific Co.
Chatillon & Sons
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Fisher Scientific Co.
Gump Co.
Howe Scale Co.
Jacobs Bros. Co.
Kron Co.
Newark Scale Works
Richardson Scale Co.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.
Triangle Package Mach.
Triner Sales Co.
Troemner, Henry

SCALES, Hopper
Buffalo Scale Co.
Chatillon & Sons
Exact Weight Scale
Fairbanks, Morse & Co.
Gump Co.
Howe Scale Co.
Jacobs Bros. Co.
Kron Co.
Richardson Scale Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Laboratory
Becker, Inc., Christian
Buffalo Scale Co.
Central Scientific Co.
Chatillon & Sons
Chicago Apparatus Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Fisher Scientific Co.
Howe Scale Co.
Humboldt Mfg. Co.
International Bus. Mach.
Jacobs Bros. Co.
Microchemical Service
Newark Scale Works
Seederer-Kohlbusch, Inc.
Toledo Scale Co.
Torsion Balance Co.
Troemner, Henry

SCALES, Larry Car
Buffalo Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Richardson Scale Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Liquid
Jacobs Bros. Co., Inc.
Richardson Scale Co.

SCALES, Loss of Weight
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale Co.
Jacobs Bros. Co.
Kron Co.
Seederer-Kohlbusch, Inc.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.

SCALES, Measuring
Automatic Scale Co.
Howe Scale Co.
Kron Co.
Richardson Scale Co.
Triner Sales Co.

SCALES, Over & Under
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
International Bus. Mach.
Jacobs Bros. Co.
Moisture Register Co.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.
Troemner, Henry

SCALES, Packaging
Automatic Scale Co.
Becker, Inc., Christian
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Gump Co.
Howe Scale Co.
Kron Co.
International Bus. Mach.
Jacobs Bros. Co.
Pneumatic Scale Corp.
Richardson Scale Co.
Toledo Scale Co.
Torsion Balance Co.
Triangle Package Mach.
Triner Sales Co.
Troemner, Henry

SCALES, Platform
Becker, Inc., Christian
Buffalo Scale Co.
Chatillon & Sons
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Gump Co.
Howe Scale Co.
Humboldt Mfg. Co.
International Bus. Mach.
Knowles Scale Works
Kron Co.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.

SCALES, Portable
Black & Decker
Buffalo Scale Co.
Central Scientific Co.
Chatillon & Sons
Exact Weight Scale
Fairbanks, Morse & Co.
Gump Co.
Howe Scale Co.
International Bus. Mach.
Jacobs Bros. Co.
Knowles Scale Works
Kron Co.
Richardson Scale Co.
Toledo Scale Co.
Triner Sales Co.

SCALES, Predetermined Weight
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Gump Co.
Howe Scale Co.
International Bus. Mach.
Jacobs Bros. Co.
Merrick Scale Mfg. Co.
Richardson Scale Co.
Schaffer Poidometer Co.
Seederer-Kohlbusch, Inc.
Streeter-Amet Co.
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.

SCALES, Recording
Buffalo Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Merrick Scale Mfg. Co.
Richardson Scale Co.
Streeter-Amet Co.
Toledo Scale Co.
Wallace & Tiernan

SCALES, Remote Indicating
Toledo Scale Co.

SCALES, Rolling Mill
Buffalo Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Sacking (See Scales, Bag-filling)

SCALES, Selecting
Exact Weight Scale
Toledo Scale Co.
United Cinephone Corp.

SCALES, Solder Test
Central Scientific Co.
Exact Weight Scale
Seederer-Kohlbusch, Inc.
Troemner, Henry

SCALES, Steel
Exact Weight Scale
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Lufkin Rule Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Testing
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale
Gump Co.
Howe Scale Co.
Humboldt Mfg. Co.
Jacobs Bros. Co.
Kron Co.
Newark Scale Works
Toledo Scale Co.
Torsion Balance Co.

SCALES, Textile
Becker, Inc., Christian
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
International Bus. Mach.
Kron Co.
Sarl Instrument Co.
Seederer-Kohlbusch, Inc.
Streeter-Amet Co.
Suter, Alfred
Toledo Scale Co.
Torsion Balance Co.
Triner Sales Co.

SCALES, Track
Buffalo Scale Co.
Fairbanks, Morse & Co.
Howe Scale Co.
Kron Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Truck
Black & Becker
Buffalo Scale Co.
Exact Weight Scale Co.
Fairbanks, Morse & Co.
Streeter-Amet Co.
Toledo Scale Co.

SCALES, Water Meter
Altender & Sons
Exact Weight Scale
Fairbanks, Morse & Co.
Jacobs Bros. Co.
Kron Co.
Toledo Scale Co.

SCALES, Yardage
Amthor Testing Inst.
Brown & Sharpe
Buffalo Scale Co.
Exact Weight Scale
Fairbanks, Morse & Co.
Howe Scale Co.
International Bus. Mach.
Kron Co.
Toledo Scale Co.

SCREENS, Solar Projecting
Fecker, J. W.

SCREENS, X-Ray Fluoroscopic
General Electric X-Ray
Kelley-Koett Mfg. Co.
Patterson Screen Co.
Westinghouse X-Ray Co.

SCREENS, X-Ray Intensifying (See Screens X-Ray Fluoroscopic)

SEED SIEVE SETS
Ballauf Mfg. Co.

SEGER CONES (See Cones, Pyrometric)

SEISMOGRAPHS
Akatos, Inc.
Alpha Instrument Co.
American Inst. Co.
Am. Telescope Labs.
Engineering Labs., Inc.
Geophysical Instrument
Heiland Research Corp.
Mico Instrument Co.
Miller Corp., Wm.

SELF-OPERATING CONTROLLERS & REGULATORS AUTOMATIC
Am. Automatic Elec.
American Inst. Co.
Arca Regulators, Inc.
Bailey Meter Co.
Bellfield Co.
Betts & Betts
Brooke Engineering
Brown Inst. Co.
Cutler-Hammer, Inc.
D'Este Co.
Dickson Co.
Elec. Indicator Corp.
Fischer & Porter
Hanlon-Waters, Inc.
Lammert & Mann Co.
Leeds & Northrup Co.
Leslie Co.
Leupold, Volpel & Co.
Mason-Neilan Regulator
Minneapolis-Honeywell
Partlow Corp.
Penn Electric Switch Co.
Perfex Corp.
Ruggles-Klingemann
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
United Transformer

SERVO-MOTORS, Electric Motor
Brown Inst. Co.
Eclipse Aviation
General Regulator Corp.
L. A. B. Corp.
Minneapolis-Honeywell

SERVO-MOTORS, Electric Solepoid
Brown Inst. Co.
Eclipse Aviation
Ruggles-Klingemann

SERVO-MOTORS, Hydraulic
Askania Regulator Co.
Eclipse Aviation
General Regulator Corp.
Hagan Corp.
Mason-Neilan Regulator
Ruggles-Klingemann

SERVO-MOTORS, Mechanical
Hagan Corp.

SERVO-MOTORS, Pneumatic
Askania Regulator Co.
Brown Inst. Co.
Hagan Corp.
Mason-Neilan Regulator
Minneapolis-Honeywell

SEXTANTS
Alpha Instrument Co.
Bausch & Lomb Opt.
Keuffel & Esser Co.
Kuner Co., Max
Master Optical Co.
Negus, T. S. & J. D.
Pioneer Instrument Co.
Warren-Knight Co.
White Co., Inc.

SHIP LOGS
Elec. Tachometer Corp.
Kenyon Instrument Co.
Negus, T. S. & J. D.
Pitometer Log Corp.

SHUNT METERS (See Meters, Shunt)

SHUNTS
Associated Research
Burton-Rogers' Co.
Columbia Elec. Mfg.
Esterline-Angus Co.
General Elec. Co.
Hickok Elec. Inst. Co.
International Resistance
Precision Resistor Co.
Radio City Products Co.
Rawson Electrical Inst.
Roller-Smith Co.
Rubicon Co.
Sensitive Research Inst.
Shallcross Mfg.
Triplett Electrical Inst.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

SHUNTS, Standard
Cambridge Instrument Co.
Esterline-Angus Co.
General Electric Co.
Gray Instrument Co.
Hickok Electrical Inst.
Instrument Resistors, Inc.
International Resistance
Leeds & Northrup Co.
Roller-Smith Co.
Rubicon Co.
Shallcross Mfg.
Triplett Elec. Inst. Co.
Weston Elec. Inst. Corp.

SIEVE SHAKERS
Braun Corp.

SIEVES, TESTING
American Inst. Co.
Central Scientific Co.
Dietert Co.
Fisher Scientific Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Richie Division
Scientific Inst. Co.
Weber Brothers Metal

SIGHT METERS
General Elec. Co.
G-M Labs.
Weston Elec. Inst. Corp.

SIGHTS, GUN, Telescopic
Bausch & Lomb Opt
Clark & Sons
Fecker, J. W.
Kollmorgen Optical Co.
Perkin-Elmer Corp.
Zeiss, Inc., Carl

SIGNAL GENERATORS (See Generators, Signal)

SIGNALING DEVICES, Automatic
American Automatic Elec.
Autocall Co.
Betts & Betts
Bullard Co.
Cincinnati Time Rec.
Elec. Indicator Corp.
Foxboro Co.
General Elec. Co.
Guardian Elec. Mfg. Co.
Holtzer-Cabot Elec. Co.
International Bus. Mach.
Leslie Co.
Leupold, Volpel & Co.
National Time & Signal
Production Instrument
Spence Engineering Co.
Thompson Clock Co.
United Cinephone Corp.

SIGNALING DEVICES, Traffic
Am. Gas Accumulator
Bullard Co.
Eagle Signal Corp.
Edison Electrical Controls
National Time & Signal
Sangamo Electric Co.

SILICA, VITREOUS
Thermal Syndicate, Ltd.

SINE BARS
Ford Motor Co.

SLIDE RULES (See Drawing Instruments)

SLIDING GAGES (See Gages, Sliding)

SLOW MOTION STUDY EQUIPMENT
Annis Co.
Boulin Instrument Corp.
Commercial Engg. Labs.
Warren Telechron Co.

SLUMP CONES (See Cones, Slump)

SMOKE DENSITY, Indicators & Recorders
Associated Research
Bailey Meter Co.
Boiler Room Equip.
Bristol Co.
Brooke Engineering
Denver Fire Clay Co.
Dickson Co.
Electronic Lab.
Electronic Prods. Co.
Ess Instrument Co.
General Elec. Co.
General Television Corp.
Leeds & Northrup Co.
Lumenite Elec. Co.
McNeill Eng. Equip.
Photobell Corp.
Photoswitch, Inc.
Preferred Utilities Mfg.
Rehtron Corp.
United Cinephone Corp.
Weston Elec. Inst. Corp.

SMOOTHNESS RECORDERS (See Surface Finish Analyzers)

SOLAR PROJECTING SCREEN (See Screen, Solar Projecting)

SOUND INDICATORS & ANALYZERS (See Indicators, Sound & Analyzers, Sound)

SOUND LEVEL METERS
Ballantine Labs.
Clough-Brengle Co.
Daven Co.
De Jur-Amsco Corp.
Electrical Research Prod.
Electronic Design Corp.
General Elec. Co.
General Radio Co.
Precision Apparatus Corp.
Radio City Products Co.
Shallcross Mfg. Co.
Sound Apparatus Co.
Triplett Electrical Inst.
Waugh Laboratories
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

SOUNDING LEADS
Ballauf Mfg. Co.
Bliss & Co.
Kenyon Instrument Co.
Kuner Co., Max
Moeller Instrument Co.
Negus, T. S. & J. D.

SOUNDING MACHINES
Ballauf Mfg. Co.
Bendix Marine Products
Kenyon Instrument Co.
Kuner Co., Max
Moeller Instrument Co.
Negus, T. S. & J. D.
Submarine Signal Co.

SOUNDING TUBES
Ballauf Mfg. Co.
Kimble Glass Co.
Moeller Instrument Co.
Negus, T. S. & J. D.

SPECIFIC GRAVITY Indicators & Recorders
American Meter Co.
Bailey Meter Co.
Builders-Providence
Eimer & Amend
Fischer & Porter
Foxboro Co.
Refinery Supply Co.
G-M Mfg. Co.
Moeller Inst. Co.
Ruehfel Co.
Schultheis Corp.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Trerice Co.

SPECTRA DEMONSTRATORS
Baird Associates
Central Scientific Co.
Eastern Science Co.
Fuess, Inc.
Gaertner Scientific Corp.

SPECTRAL TUBES CONTAINING RARE GASES (See Spectrum Tubes)

SPECTROGRAPHS
Akatos, Inc.
Baird Associates
Bausch & Lomb Optical
Bryden Co.
Gaertner Scientific Corp.
Spencer Lens Co.
Zeiss, Inc., Carl

For addresses, see pages 82-91

Standards . . . RESISTORS INDUCTORS CAPACITORS STANDARD CELLS

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SPECTROGRAPHS, Diffraction Grating
Applied Research Labs.
Baird Associates

SPECTROGRAPHS, Oscillating
Hayes Scientific App.

SPECTROGRAPHS, Vacuum
Central Scientific Co.
Dietert Co.
Fecker, J. W.
Fuess, Inc.
Jarrell-Ash Co.

SPECTROGRAPHS, X-ray
Central Scientific Co.
Fuess, Inc.
Gaertner Scientific
General Electric X-Ray
Hayes Scientific App.
Jarrell-Ash Co.
Kelley-Koett Mfg.

SPECTROMETERS
Akatos, Inc.
American Askania Corp.
Bausch & Lomb Optical
Fuess, Inc.
Gaertner Scientific
Jarrell-Ash Co.
Spencer Lens Co.

SPECTROMETER, Infra-Red
Gaertner Scientific Corp.

SPECTROMETERS, X-RAY (See Spectographs, X-Ray)

SPECTRO-PHOTOMETERS (See Photometers, Spectro)

SPECTROSCOPES
Akatos, Inc.
American Askania Corp.
Bausch & Lomb Opt.
Fuess, Inc.
Gaertner Scientific Corp.
Laboratory Specialties
Leitz, Inc.
Spencer Lens Co.

SPECTROSCOPE, Quartz
Gaertner Scientific Corp.

SPECTROSCOPES, Stellar
Am. Telescope Labs.
Central Scientific Co.
Eastern Science Co.
Fecker, J. W.
Mico Instrument Co.
Perkins-Elmer Corp.
Zeiss, Inc., Carl

SPECTRUM TUBES
Central Scientific Co.
Fuess, Inc.
Gaertner Scientific Corp.
General Physical Lab.
Jarrell-Ash Co.

SPEED, Indicators
Amthor Testing Inst. Co.
Bailey Meter Co.
Biddle Co., Jas. G.
Boulin Instrument Corp.
Brown Inst. Co.
Commercial Engg. Labs.
Cramer & Co., Inc.
Electric Speed Ind. Co.
Elec. Tachometer Corp.
Elgin National Watch
Esterline-Angus Co.
Foxboro Co.
Gaertner Scientific Corp.
General Elec. Co.
Hasler-Tel Co.
Hathaway Inst. Co.
Hickok Elec. Inst. Co.
Jaeger Watch Co.
Jones-Motrola
Leeds & Northrup Co.
Martin Decker Corp.
McDonnell Odometer Co.
Moisture Register Co.
Pioneer Instrument
Precision Therm.
Roller-Smith Co.
Scherr Co., Inc.
Sound Apparatus Co.
Starrett Co.
Sticht & Co.
Valve Pilot Corp. (Locomotive)
Veeder-Root, Inc.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
Zernickow Co., O.

SPEED, Recorders (See Speed Indicators)

SPEED, Regulators (See Controllers, Automatic, Tachometric)

SPEED SYNCHRONIZING INDICATORS
Electric Speed Ind. Co.

SPEEDOMETERS
Boulin Instrument Corp.
Central Scientific Co.
Corbin Screw Corp.
Cramer & Co., Inc.
Electric Auto-Lite
Elec. Tachometer Corp.
General Elec. Co.
Jones-Motrola
Knopf, Paul
Stewart-Warner Corp.
Westinghouse Elec. & Mfg.

SPHEROMETERS
American Askania Corp.
Central Scientific Co.
Ferner Co.
Fish-Schurman Co.
Fuess, Inc.
Gaertner Scientific Corp.
Merkle Korff Gear
Ruska & Co.
Seiss Co., Inc.
Welch Scientific Co.

SPHYGMOMANOMETERS
Cambridge Inst. Co.
Central Scientific Co.
Hellige, Inc.
Precision Thermometer
Taylor Inst. Cos.

SQUARES, Combination & Machinists'
Brown & Sharpe
Lufkin Rule Co.
Mico Instrument Co.
Starrett Co.
Union Tool Co.
Warren-Knight Co.

STANDARD CELLS (See Cells, Standard)

STANDARDS, Capacitance
Cambridge Inst. Co.
General Radio Co.
Industrial Instruments
Leeds & Northrup Co.
Rubicon Co.
Solar Mfg. Corp.

STANDARDS, Color
Fish-Schurman Co.
Hellige, Inc.
Munsell Color Co.
Tagliabue Mfg. Co.

STANDARDS E.m.f.
Cambridge Inst. Co.
Leeds & Northrup Co.
Rubicon Co.

STANDARDS, Frequency
Andrew, Victor J.
Ferris Inst. Corp.
General Radio Co.
RCA Manufacturing
Warren Telechron Co.

STANDARDS, Inductance
Cambridge Inst. Co.
General Radio Co.
Leeds & Northrup Co.
Rubicon Co.

STANDARDS, Length
Gaertner Scientific Corp.
Gurley, W. & L. E.
Van Keuren Co.

STANDARDS, Mass
Gurley, W. & L. E.
Seederer-Kohlbusch, Inc.

STANDARDS, Potential
Leeds & Northrup Co.
Rubicon Co.

STANDARDS, Pressure
Green, Henry J.
Precision Therm.

STANDARDS, Resistance
Beck Bros.
Cambridge Inst. Co.
General Radio Co.
International Resistance
Leeds & Northrup Co.
Rubicon Co.
Shaffcross Mfg. Co.
Sticht & Co.
Ward Leonard Elec. Co.

STANDARDS, Sound Level
General Radio Co.

STANDARDS, Temperature
Green, Henry J.
Leeds & Northrup Co.
Moeller Instrument Co.
Precision Therm.
Tagliabue Mfg. Co.

STANDARDS, Time
Gaertner Scientific Corp.
General Radio Co.
Standard Elec. Time Co.
Warren Telechron Co.

STANDARDS, Volume
Gurley, W. & L. E.

STARTERS, MOTOR
Allen-Bradley Co.
Cutler-Hammer, Inc.
Eclipse Aviation
General Elec. Co.
Monitor-Controller Co.
Penn Electric Switch Co.
Schaefer Bros. Co.
Ward Leonard Elec. Co.

STATION CONTROL EQUIPMENT
American Meter Co.
Area Regulators, Inc.
Elec. Indicator Corp.
General Elec. Co.
RCA Manufacturing

STEAM METERS (See Flow Meters, Steam)

STEEL TAPES (See Tapes, Steel)

STELLAR SPECTROSCOPES (See Spectroscopes, Stellar)

STEREOSCOPES, X-Ray
Abrams Instrument
Bausch & Lomb Optical
Kelley-Koett Mfg. Co.
Westinghouse X-Ray Co.

STETHOSCOPES, ENGINEERS
Brush Development Co.
Test-A-Tone Co.

STIFFNESS TESTERS, PAPER (See Tester, Stiffness, Paper)

STILLS, AUTOMATIC WATER
Barnstead Still & Steril.
Central Scientific Co.
Fish-Schurman Co.
Specialty Glass Co.
Stokes Machine Co.
Weber Bros. Metal Works

STIRRERS, LABORATORY, Variable Speed
Eastern Engg. Co.

STOP WATCHES (See Watches, Stop)

STRAIGHT EDGES
Brown & Sharpe
Dietzen Co.
Ford Motor Co.
Keuffel & Esser Co.
George Scherr Co.
Soltmann, Inc.
Speidel & Co.
Warren-Knight Co.
Weber Co., F.
White Co. Inc.

STRAIGHTENING VANES
Robinson Orifice Fitting

STRAIN GAGES (See Gages, Strain)

STRAIN TESTERS, GLASS (See Testers, Strain (Glass)

STRAIN-TIME RECORDERS
Baldwin-Southwark Corp.
Keuffel & Esser Co.
Cambridge Inst. Co.

STREAM GAGING INSTRUMENTS
Gurley W. & L. E.
Keuffel & Esser Co.
Morey & Jones, Ltd.

STRESS INDICATORS
Ames Co., B. C.
Baldwin-Southwark Corp.
Cambridge Inst. Co.
Martin Decker Corp.
Riehle Div.

STRESS-STRAIN, Indicators
Ames Co., B. C.
Baldwin-Southwark Corp.

STRESS-STRAIN, Recorders
Baldwin-Southwark Corp.
Cambridge Inst. Co.
Olsen Testing Machine
Riehle Div.

STROBOSCOPES
Boulin Inst. Corp.
Commercial Engg. Labs.
L. A. B. Corp.
Pioneer Instrument
Welch Mfg. Co.
Westinghouse Elec. & Mfg.
Zeiss, Inc., Carl

SULPHUR BOMBS (See Bombs, Sulphur)

SULPHUR DIOXIDE, Indicators (See Gas Analyzers, Sulphur Dioxide) **Recorders** (See Gas Analyzers, Sulphur Dioxide)

SUNSHINE, Indicators & Recorders
Cambridge Inst. Co.
Esterline-Angus Co.
Friez & Sons
Fuess, Inc.
G. M. Mfg. Co., Inc.
Leeds & Northrup
Taylor Inst. Cos.
White Co. Inc.

SUPERVISORY CONTROL EQUIPMENT
American Automatic Elec.
Autocall Co.
Bristol Co.
Control Corp.
Cramer & Co., Inc.
General Elec. Co.
Guardian Elec. Mfg. Co.
Leeds & Northrup Co.
Tagliabue Mfg. Co.

SURFACE FINISH TESTERS
Brush Development Co.
Physicists Research

SURFACE GAGES (See Gages, Surface)

SURFACE PLATES, GLASS
Bausch & Lomb Optical
Clark & Sons
Fecker, J. W.
Fish-Schurman Co.
Ruska & Co.
Zeiss, Inc., Carl

SURGE CREST AMMETERS (Ammeters, Surge-Crest)

SURGE, Indicators & Recorders
Elec. Indicator Corp.
General Elec. Co.
Esterline-Angus Co.

SURVEYING INSTRUMENTS
Abrams Instrument
Alpha Instrument Co.
Beckman Co.
Berger & Sons
Bliss & Co.
Bostrom-Brady
Dietzen Co.
(Cont'd)

Speed - - -

DIRECT READING INDICATORS

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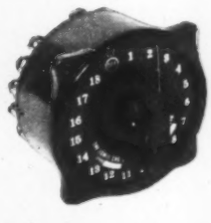

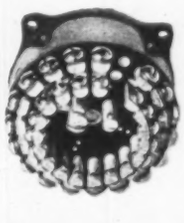

ROTARY SELECTOR SWITCHES

(Write for Bulletin 1-1)

Standard With "Off" Position and 2 to 40 Points

Lewis switches for thermocouple and resistance thermometer circuits are extremely rugged and have exceptionally low resistance. All blades and studs are heavily silver plated and are self-cleaning due to the wiping action of the blades.

THE LEWIS ENGINEERING CO., Naugatuck, Connecticut

For addresses, see pages 82-91

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Gurley, W. & L. E.
Kenyon Instrument Co.
Kern Co.
Keuffel & Esser Co.
Kolesch & Company
Leupold, Volpel & Co.
Pittsburgh Inst. & Mach.
Post Co., Frederick
Speedometer Electric Co.
Speidel & Co.
J. C. Ulmer Co.
United States Blue Print
Warren-Knight Co.
Weber Co.
White Co., Inc.
Zeiss, Inc., Carl

SURVEYING INSTRUMENTS, Aneroids
Am. Paulin System

SURVEYING INSTRUMENTS, Underground, for wells or bore holes
H. Cole Co.
Driftmeters, Inc.
Engineering Labs., Inc.
Geophysical Inst. Co.
Halliburton Oil Well
Heiland Research
Ruska & Co.
Sperry-Sun Well Survey
Warren-Knight Co.
David White Co., Inc.

SURVEYOR'S CHAINS (See Surveying Instruments)

SWITCHES, Air-operated
Johnson Service Co.
Shallcross Mfg. Co.
Tagliabue Mfg. Co.

SWITCHES, Automatic Transfer
Allen-Bradley Co.
Anderson, A. & J. M.
Arrow-Hart & Hegeman
Autocall Co.
Automatic Switch Co.
Cramer & Co., Inc.
Cutler-Hammer, Inc.
General Elec. Co.
Hart Mfg. Co.
Monitor Controller Co.
Ward Leonard Elec. Co.
Zenith Electric Co.

SWITCHES, Instrument
Autocall Co.
Furnas Electric Co.
General Elec. Co.
J-B-L Inst. Co.
Kellogg Switchboard
Mallory & Co.
Micro Switch Corp.
Roller-Smith Co.
Rubicon Co.
Sensitive Research Inst.
Shallcross Mfg.
Thwing-Albert Instrument
Triplett Elec. Inst. Co.
United States Inst. Corp.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

SWITCHES, Magnetic
Allen-Bradley Co.
Arrow-Hart & Hegeman
Autocall Co.
Automatic Switch Co.
Cutler-Hammer, Inc.
General Elec. Co.
Guardian Elec. Mfg. Co.
Hart Mfg. Co.
Industrial Engr. Corp.
Monitor Controller Co.
Penn Electric Switch
Perfex Corp.
Struthers-Dunn
Ward Leonard Elec. Co.
Zenith Electric Co.

SWITCHES, Mercury
Arrow-Hart & Hegeman
Continental Elec. Co.
Elec. Switch Corp.
Frederick, George
General Elec. Co.
Gen. Elec. Lamp Dept.
Hart Mfg. Co.
Minneapolis-Honeywell

SWITCHES, Pyrometer
Brown Inst. Co.
J-B-T Insts. Inc.
Lewis Engg. Co.
Tagliabue Mfg. Co.
Thwing-Albert Inst. Co.
Weston Elec. Inst. Corp.

SWITCHES, Relay
Allen-Bradley Co.
Andrew, Victor J.
Amer. Automatic Elec.
Arrow-Hart & Hegeman
Autocall Co.
Automatic Switch Co.
Betts & Betts
Cutler-Hammer, Inc.
Eclipse Aviation
Edison Electrical Controls
(Cont'd)

SWITCHES, Relay (Cont'd)
Friez & Sons
General Controls Co.
General Elec. Co.
Guardian Elec. Mfg. Co.
Hart Mfg. Co.
Industrial Engr. Corp.
Kellogg Switchboard
Mallory & Co.
Monitor Controller Co.
Penn Electric Switch
Perfex Corp.
Struthers-Dunn
Ward Leonard Elec. Co.
Zenith Electric Co.

SWITCHES, Rotary
Amer. Automatic Elec.
Arrow-Hart & Hegeman
Autocall Co.
Barber-Coleman
Daven Co.
Furnas Electric Co.
General Elec. Co.
Guardian Elec. Mfg. Co.
Hart Mfg. Co.
Lewis Engg. Co.
Mallory & Co.
Ohmite Mfg. Co.
Roller-Smith Co.
Rubicon Co.
Sensitive Research Inst.
Shallcross Mfg. Co.
Tagliabue Mfg. Co.
Thwing-Albert Inst. Co.
Triplett Electrical Inst.
Weston Elec. Inst. Corp.

SWITCHES, Snap
Arrow-Hart & Hegeman
Cutler-Hammer, Inc.
General Elec. Co.
Hart Mfg. Co.
Mallory & Co.
McDonnell & Miller
Micro Switch Corp.
Minneapolis-Honeywell
Perfex Corp.
Ward Leonard Elec. Co.

SWITCHES, Thermostatic
Advance Electric Co.
Allen-Bradley Co.
Betts & Betts
Burling Instrument Co.
Cook Electric Co.
Dunn, Inc., Struthers
Edison Electrical Controls
Friez & Sons
Gleason-Avery, Inc.
Guardian Electric
Hart Manufacturing Co.
Minneapolis-Honeywell
Penn Electric Switch Co.
Perfex Corp.
Shallcross Mfg. Co.
Spencer Thermostat Co.
Tagliabue Mfg. Co., C. J.
Ulanet Co., George
Ward Leonard Electric Co.

SWITCHES, Time
American Timer Corp.
Anderson, A. & J. M.
Autocall Co.
Automatic Elec. Mfg.
Bacon Electric Timer
Betts & Betts
Cramer & Co., Inc.
Eagle Signal Corp.
Edison Electrical Controls
General Elec. Co.
Guardian Elec. Mfg. Co.
Industrial Engr. Corp.
Industrial Timer
Landis & Gyr, Inc.
Mallory & Co.
Minneapolis-Honeywell
Paragon Electric Co.
Penn Electric Switch
Perfex Corp.
Rhodes, Inc., M. H.
Sangamo Electric Co.
Seely Instrument Co.
States Co.
Thomas Clock Co., Seth
Thompson Clock Co.
Wadsworth Elec. Mfg. Co.
Walser Automatic Timer
Ward Leonard Elec. Co.
Zenith Electric Co.

SYNCHRONIZATION FORKS, Electrical (See Forks, Synchronization)

SYNCHRONOUS MOTORS (See Motors, Synchronous)

SYNCHROSCOPES
Eclipse Aviation
Electric Controller
General Elec. Co.
Hickok Elec. Inst. Co.
Kollsman Inst. Co.
Roller-Smith Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

TACHOGRAPHS
Amthor Testing Inst.
Biddle Co., Jas. G.
Coats Mach. Tool Co.
Cramer & Co., Inc.
Ohmer Register Co.
Zeiss, Inc., Carl
Zernickow Co., O.

TACHOMETER TESTERS (See Testers, Tachometer)

TACHOMETERS, Centrifugal
Amthor Testing Inst. Co.
Barbour Stockwell Co.
Biddle Co., Jas. G.
Boulin Instrument Corp.
Coats Mach. Tool Co.
(Cont'd)

BOULIN INSTRUMENTS

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- Portable Stroboscopic Tachometers
- Portable and Stationary Centrifugal Tachometers
- Filament, yarn and wire Tensiometers

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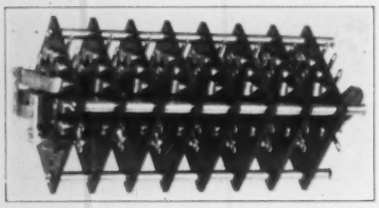

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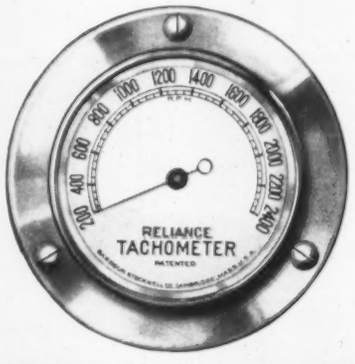

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CAMBRIDGE, MASSACHUSETTS

For addresses, see pages 82-91

TACHOMETERS, Centrifugal (Cont'd)
Corbin Screw Corp.
Durant Mfg. Co.
Elec. Tachometer Corp.
Foxboro Co.
Hays Corp.
Jones Motrola Sales
Knopf, Paul
Kollsman Inst. Co.
Manning, Maxwell & Moore
Pioneer Instrument Co.
Scherr Co., Inc.
Stewart-Warner Corp.
Sticht & Co.
Veeder-Root, Inc.
Viking Instrument Co.
Zernickow Co., O.

TACHOMETERS, Chronometric
Amthor Testing Inst.
Biddle Co., Jas. G.
Boulin Instrument Corp.
Coats Mach. Tool Co.
Cramer & Co., Inc.
Elec. Tachometer Corp.
Elgin Nat'l Watch Co.
Hasler-Tel Co.
Jaeger Watch Co.
Pierce Watch Co.
Scherr Co., Inc.
Standard Elec. Time
Sticht & Co.
Stover-Lang Co.
Zernickow Co., O.

TACHOMETERS, Cross-pendulum
Amthor Testing Inst.
Biddle Co., Jas. G.
Coats Mach. Tool Co.
Sticht & Co.
Zernickow Co., O.

TACHOMETERS, Electric
Bristol Co.
Brown Inst. Co.
Electric Speed Ind. Co.
Elec. Tachometer Corp.
Esterline-Angus Co.
Foxboro Co.
General Elec. Co.
Hathaway Inst. Co.
Hickok Elec. Inst. Co.
Hy-Ef Electrical Prods.
Jaeger Watch Co.
J-B-T Instruments
Jones Motrola Sales
Kollsman Inst. Co.
Lantz-Phelps Corp.
Martin Decker Corp.
Moisture Register Co.
National Instrument Co.
Pioneer Instrument Co.
Pitometer Log Corp.
Potter Co.
Scherr Co., Inc.
Sticht Co., Inc.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
Winslow Co.
Zip Abrasive Co.

TACHOMETERS, Electromagnetic
Cummings Mach. Works
Electric Auto-Lite
Jaeger Watch Co.
Kollsman Inst. Co.
National Instrument Co.
Pioneer Instrument
Standard Elec. Time Co.
Stewart-Warner Corp.
Zernickow Co., O.

TACHOMETERS, Fly-ball
Biddle Co., Jas. G.
Coats Mach. Tool Co.
Elec. Tachometer Corp.
Jones Motrola Sales
Sticht & Co.
Viking Instrument Co.

TACHOMETERS, Portable
Amthor Testing Inst. Co.
Associated Research
Biddle Co., Jas. G.
Boulin Instrument Corp.
Corbin Screw Corp.
Elec. Tachometer Corp.
Foxboro Co.
Hasler-Tel Co.
Jones Motrola Sales
Manning, Maxwell & Moore
Martindale Electric Co.
Rieker Instrument Co.
Sticht & Co.
Viking Instrument Co.
Zernikow Co.

TACHOMETERS, Speed Limit Control
Barbour Stockwell Co.

TACHOMETERS, Stroboscopic
Boulin Instrument Corp.
Coats Mach. Tool
General Radio Co.
L. A. B. Corp.
Stewart-Warner Corp.

TACHOMETERS, Tiltingring
Amthor Testing Inst. Co.
Coats Mach. Tool Co.
Zernikow Co.

TACHOMETERS, Vibrating Reed
Biddle Co., Jas. G.

TACHOSCOPES
Amthor Testing Inst. Co.
Biddle Co., Jas. G.
Scherr Co., Inc.
Sticht & Co.
Zernickow Co., O.

TAFFRAIL LOGS; SHIP
Bliss & Co.

TANGENT METERS (See Meters, Tangent)

TAPE STRETCHER APPARATUS
Ballauf Mfg. Co.

TAPES, Oil Gauger's
Keuffel & Esser Co.

TAPES, Steel
Dietzen Co.
Keuffel & Esser Co.
Lufkin Rule Co.
Soltmann, Inc.
Speidel & Co.
Starrett Co.
United States Blue Print
Warren-Knight Co.
Weber Co.
White Co. Inc.

TAPES, Surveyor's (See Surveying Instruments)

TAXI METERS
Knopf, Paul
Ohmer Register Co.
Pittsburgh Taximeter Co.

TELEMETERING SYSTEMS (See Remote Metering)

TELEMETERS (Surveying & Military—Optical)
Kern Co.
Kollmorgen Optical Co.
Keuffel & Esser Co.
Pierce Watch Co.

TELESCOPES, Alignment
Am. Telescope Labs.
Fecker, J. W.
Gen. Engg. & Model
Keuffel & Esser Co.
Kollmorgen Optical Co.
Perkin-Elmer Corp.
Ruska & Co.
Scherr Co., Inc.
Unertl, John
White Co. Inc.

TELESCOPES, Astronomical
Am. Telescope Labs.
Bausch & Lomb Opt.
Clark & Sons
Eastern Science Co.
Fecker, J. W.
Gaertner Scientific Corp.
Kern Co.
Mico Instrument Co.
Perkin-Elmer Corp.
Tinsley Labs.
Unertl, John
Zeiss, Inc., Carl

TELESCOPES, Azimuth
Am. Telescope Labs.
Clark & Sons
Fecker, J. W.
Gaertner Scientific Corp.
Kern Co.
Kollmorgen Optical Co.
Perkin-Elmer Corp.
Tinsley Labs.
Unertl, John
Warren-Knight Co.
Warner & Swasey Co.
Zeiss, Inc., Carl

TELESCOPES, Bore & Internal Surface, Inspection
American Cystoscope
Am. Telescope Labs.
Fecker, J. W.
Gaertner Scientific
Gen. Engg. & Model Wk.
Kollmorgen Optical Co.
Lenox Inst. Co.
Perkin-Elmer Corp.
Scherr Co., Inc.
Unertl, John
Zeiss, Inc., Carl

TELESCOPES, Laboratory
Gaertner Scientific Corp.
Ruska & Co.

TELESCOPES, Reflecting
Am. Telescope Labs.
Clark & Sons
Fecker, J. W.
Fish-Schurman Co.
Perkin-Elmer Corp.
Tinsley Labs.
Unertl, John
Warner & Swasey Co.
Zeiss, Inc., Carl

TELESCOPES, Refracting
Am. Telescope Labs.
Bausch & Lomb Opt.
Clark & Sons
Fecker, J. W.
Fish-Schurman Co.
Kern Co.
Keuffel & Esser Co.
Perkin-Elmer Corp.
Tinsley Labs.
Unertl, John
Warner & Swasey Co.
Wollensak Optical Co.
Zeiss, Inc., Carl

TELESCOPES, Zenith
American Askania Corp.
Am. Telescope Labs.
Clark & Sons
Fecker, J. W.
Gaertner Scientific Corp.
Kern Co.
Perkin-Elmer Corp.
Unertl, John
Zeiss, Inc., Carl

TENSIOMETERS
Boulin Instrument Corp.
Central Scientific Co.
Geophysical Inst. Co.
Olsen Testing Machine
Suter, Alfred
Thwing-Albert
Toledo Scale Co.

TENSION INDICATORS
Martin Decker Corp.
Pacific Scientific Co.
Seederer-Kohlbusch, Inc.

TENSION INDICATORS, Textile
Boulin Instrument Corp.

TEST BLOCKS
Detroit Testing Mach. Co.
Eitzen Co.
Ford Motor Co.
Meter Devices Co.
Steel City Testing Lab.
Van Keuren Co.

TEST INDICATOR
Deming Indicator Co.
Reich Mfg. Co.

TEST WEIGHTS (See Weights, Test)

TEST WELLS
Palmer Co.
Tagliabue Mfg. Co.

TESTERS, Tachometer
Rieker Inst. Co.

TESTERS & TESTING MACHINES (See also object of measurement and control)

TESTERS & TESTING MACHINES, Abrasion
American M. A. N. Corp.
Amthor Testing Inst. Co.
Atlas Elec. Devices Co.
Fidelity Mach. Co.
Morehouse Machine Co.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Shawmut Engineering Co.
Suter, Alfred
Taber Instrument Co.
Testing Machines, Inc.
Welch Engineering Co.
Zuhr, Inc., Henry

TESTERS & TESTING MACHINES, Absorption
Gurley, W. & L. E.

TESTERS & TESTING MACHINES, Air Speed Indicator (See Airspeed Indicator Testers)

TESTERS & TESTING MACHINES, Alternating Stress
American M. A. N. Corp.
Brush Development Co.
Krouse Fatigue Machine
Olsen Testing Machine
Riehle Div.
Suter, Alfred

TESTERS & TESTING MACHINES, Altimeter (See Altimeter Testers)

TESTERS & TESTING MACHINES, Armature
Ideal Commutator Dresser

TESTERS & TESTING MACHINES, Asphalt
American Inst. Co.
Atlas Electric Devices
Brabender Corp.
Braun Corp.
Central Scientific Co.
Chatillon & Sons
Exact Weight Scale
Fish-Schurman Co.
Fisher Scientific Co.
Humboldt Mfg. Co.
Philadelphia Thermometer
Precision Scientific Co.
Riehle Div.
Tagliabue Mfg. Co.
Victor Equipment Co.
Western Machinery Co.

TESTERS & TESTING MACHINES, Axle
Sperry Products, Inc.

TESTERS & TESTING MACHINES, Ball Bearing (See Testers, Bearing)

TESTERS & TESTING MACHINES, Battery
Burton-Rogers Co.
Clough-Brengle Co.
Hickok Elec. Inst. Co.
Hy-Ef Electrical Prods.
Lantz-Phelps Corp.
Lundquist Tool & Mfg.
Precision Therm.
Rascher & Retzold
Rieker Inst. Co.
Ruth Glass Division
Testrite Instrument Co.
Weston Elec. Inst. Corp.

TESTERS & TESTING MACHINES, Beating
Brabender Corp.
Paprex Co.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Bearing
American M. A. N. Corp.
Olsen Testing Machine
RCA Manufacturing Co.
Suter, Alfred

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TESTERS & TESTING MACHINES, Bending
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Dorr-Patterson Engr.
Hayes Scientific Apps.
Instrument Specialties
Olsen Testing Machine
Morehouse Machine Co.
Riehle Div.
Saxl Inst. Co.
Steel City Testing Lab.
Suter, Alfred
Taber Instrument Co.
Testing Machines, Inc.

TESTERS & TESTING MACHINES, Brake
American Inst. Co.
Clough-Brengle Co.
Commercial Engg. Labs.
Cramer & Co., Inc.

TESTERS & TESTING MACHINES, Brinell
Detroit Testing Mach.
Ferner Co.
King, Andrew
Olsen Testing Machine
Pittsburgh Inst. & Mach.
Riehle Div.
Steel City Testing Lab.
Suter, Alfred
Testing Machines, Inc.

TESTERS & TESTING MACHINES, Brittleness
Baldwin-Southwark Corp.
Riehle Div.
Saxl Instr. Co.

TESTERS & TESTING MACHINES, Bursting
Perkins & Son, Inc.
Scott Co., Henry L.
Suter, Alfred
Testing Machines, Inc.

TESTERS & TESTING MACHINES, Cable
Amthor Testing Inst.
Atlas Electric Devices
Boulin Instrument Corp.
General Elec. Co.
Leeds & Northrup Co.
Martin Decker Corp.
Olsen Testing Machine
Riehle Div.
Rubicon Co.
Scott Co., Henry L.
Shallcross Mfg. Co.
Suter, Alfred

TESTERS & TESTING MACHINES, Cement
American Inst. Co.
Baldwin-Southwark Corp.
Burrell Tech. Supply
Central Scientific Co.
Exact Weight Scale Co.
Federal Pneumatic Sys.
(Cont'd)

TESTERS & TESTING MACHINES, Cement (Cont'd)
Fisher Scientific Co.
Hayes Scientific App.
Humboldt Mfg. Co.
Olsen Testing Machine
Precision Scientific Co.
Refinery Supply Co.
Riehle Div.
Scientific Inst. Co.
Scott Co., Henry L.
Sodemann Heat & Power
Suter, Alfred
Western Machinery Co.

TESTERS & TESTING MACHINES, Chain
Detroit Testing Machine
Riehle Div.

TESTERS & TESTING MACHINES, Chlorine
Bushnell & Nevins
Everson Mfg. Co.
Hellige, Inc.
Industrial Inst. Inc.
Rascher & Retzold
Taylor & Co., Inc.
Wallace & Tiernan

TESTERS & TESTING MACHINES, Coal (See Fuel below)

TESTERS & TESTING MACHINES, Coil (Electric)
Boonton Radio Corp.
Clough-Brengle Co.
Ideal Commutator Dresser
Industrial Insts, Inc.
Rubicon Co.

TESTERS & TESTING MACHINES, Color
Atlas Electric Devices Co.
Eimer & Amend
Fisher Scientific Co.
Gaertner Scientific Corp.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Compression
American M. A. N. Corp.
Baldwin-Southwark Corp.
Dorr-Patterson Engr. Co.
Exact Weight Scale Co.
Ferner Co.
Olsen Testing Machine
Perkins & Son, Inc.
Potter Co.
RCA Manufacturing
Riehle Div.
Scott Co., Henry L.
Steel City Testing Lab.
Suter, Alfred
Toledo Scale Co.

TESTERS & TESTING MACHINES, Concrete (See Cement above)

TESTERS & TESTING MACHINES, Condenser
Aerovox Corp.
Clough-Brengle Co.
Electronic Design Corp.
Industrial Insts. Inc.
Jackson Electrical Inst.
Potter Co.
Rubicon Co.
Tobe Deutschmann Corp.
Triplett Electrical Inst.
Weston Elec. Inst. Corp.

TESTERS & TESTING MACHINES, Creep
Gaertner Scientific Corp.
Instrument Specialties Co.
Olsen Testing Machine
Riehle Div.
Suter, Alfred

TESTERS & TESTING MACHINES, Damping
American M. A. N. Corp.
Baldwin-Southwark Corp.

TESTERS & TESTING MACHINES, Deflection
Instrument Specialties

TESTERS & TESTING MACHINES, Deflection, Light Wave
Gaertner Scientific Corp.
Van Keuren Co.

TESTERS & TESTING MACHINES, Dew Point
General Electric
Refinery Supply Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Diaphragms
Instrument Specialties

TESTERS & TESTING MACHINES, Dielectric Properties
American Transformer Co.
Associated Research, Inc.
Leeds & Northrup Co.
Muller Co., B. F.
Roller-Smith Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Ductility
Central Scientific Co.
Detroit Testing Mach.
Humboldt Mfg. Co.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Steel City Testing Lab.
Suter, Alfred

For addresses, see pages 82-91

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CAMBRIDGE provides this sturdy, precise, dependable instrument—the Ewing Extensometer. It is used to continuously observe and measure the change in length of a specimen undergoing tension or compression tests. It is applicable to large or small test pieces and can be used on either vertical or horizontal testing machines. Can be supplied to read in either English or metric units. A modified form of this instrument is made for measuring the elastic compression of short blocks having clip centers two inches apart.

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TESTERS & TESTING MACHINES, Emulsion & Demulsibility
Central Scientific Co.
Eimer & Amend

TESTERS & TESTING MACHINES, Expansion
Brabender Corp.
Exact Weight Scale Co.
Ferner Co.
Gaertner Scientific Corp.

TESTERS & TESTING MACHINES, Fatigue
American M. A. N. Corp.
Baldwin-Southwark Corp
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Hathaway Inst. Co.
Hays Scientific App.
Krouse Fatigue Mach.
Olsen Testing Machine
Raytheon Mfg. Co.
Ruehfel Co.
Saxl Inst. Co.
Scott Co., Henry L.
Suter, Alfred
Testing Machines, Inc.
Zuhr, Inc., Henry

TESTERS & TESTING MACHINES, Flash Point, Abel's
Central Scientific Co.
Ruehfel Co.

TESTERS & TESTING MACHINES, Flash Point, Abel-Pensky's (See Abel's above)

TESTERS & TESTING MACHINES, Flash Point, Cleveland Open Cup
American Inst. Co.
Boekel & Co.
Central Scientific Co.
Eimer & Amend
Humboldt Mfg. Co.
Olsen Testing Machine
Precision Scientific Co.
Ruehfel Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Flash Point, Elliott Closed Cup
American Inst. Co.
Central Scientific Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Ruehfel Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Flash Point, Pensky-Martens
Boekel & Co.
Central Scientific Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Ruehfel Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Flash Point, Tag Closed
Central Scientific Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Ruehfel Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Flatness, Light Wave
Baird Associates
Fecker, J. W.
Fish-Schurman Co.
Gaertner Scientific Co.
Scherr Co., Inc.
Van Keuren Co.
Zeiss, Inc., Carl

TESTERS & TESTING MACHINES, Folding Endurance (Paper)
American Inst. Co.
Amthor Testing Inst. Co.
Olsen Testing Machine
Saxl Inst. Co.
Suter, Alfred
Testing Machines, Inc.
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Freeness
Dietert Co.
Paprex Co.
Testing Machines, Inc.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Fuel
Brabender Corp.
Burrell Technical Supply
Central Scientific Co.
Emerson Apparatus Co.
Fish-Schurman Co.
Fisher Scientific Co.
Parr Instrument Co.
Riehle Div.
Sargent & Co.

TESTERS & TESTING MACHINES, Gage (See Gage Testers)

TESTERS & TESTING MACHINES, Gas
American Meter Co.
Burrell Technical Supply
Central Scientific Co.
Connelly Iron Sponge
Eimer & Amend
Fish-Schurman Co.
Fisher Scientific Co.
Friez & Sons
Fuess, Inc.
Gow-Mac Instrument
Heiland Research
Refinery Supply Co.
Ruska & Co., Inc.
Sargent & Co.
Superior Meter Co.

TESTERS & TESTING MACHINES, Gear
Morse Twist Drill
Scherr Co., Inc.

TESTERS & TESTING MACHINES, Glue
Central Scientific Co.
Eimer & Amend
Fish-Schurman Co.
Olsen Testing Machine
Saxl Inst. Co.

TESTERS & TESTING MACHINES, Grain
Central Scientific Co.
Exact Weight Scale
Gump Co.
Moist-O-Meter, Inc.
Moisture Register Co.
Newark Scale Works
Tagliabue Mfg. Co.
Toledo Scale Co.
Troemner, Henry

TESTERS & TESTING MACHINES, Grease (See Grease Testing Apparatus)

TESTERS & TESTING MACHINES, Grinding Wheel
Olsen Testing Machine

TESTERS & TESTING MACHINES, Ground Resistance
Biddle Co., Jas. G.
Geophysical Inst. Co.
Heiland Research
Industrial Insts. Inc.
Shallcross Mfg.
Sticht & Co.

TESTERS & TESTING MACHINES, Gummed Tape
Amthor Testing Inst.
Scott Co., Henry L.
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Hardness
Barber-Colman Co.
Detroit Testing Mach.
Dietert Co.
Eitzen Co.
Ferner Co.
Fisher Scientific Co.
Gogan Machine
King, Andrew
Leitz, Inc.
Olsen Testing Machine
Pittsburgh Inst. & Mach.
Riehle Div.
Saxl Inst. Co.
Shore Instrument
Steel City Testing Lab.
Suter, Alfred
Teleweld, Inc.
Testing Machines, Inc.
Wilson Mech Inst. Co.
Zeiss, Inc., Carl

TESTERS & TESTING MACHINES, Hardness of Grindable Materials
Brabender Corp.

TESTERS & TESTING MACHINES, Hardness of Plastic Films
Munsell Color Co.
Saxl Inst. Co.
Steel City Testing Lab.
Taber Instrument Co.
Testing Machines, Inc.

TESTERS & TESTING MACHINES, High Pressure, for Hose Lines & hydraulic devices
Hydraulic Controls

TESTERS & TESTING MACHINES, Hydrogen-Ion (See Hydrogen Ion Determination Instruments)

TESTERS & TESTING MACHINES, Impact
Baldwin-Southwark Corp.
Cambridge Inst. Co.
Impact Register Co.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Steel City Testing Lab.
Testing Machines, Inc.
Thwing-Albert Inst.
Saxl Inst. Co.
Zuhr, Inc., Henry

TESTERS & TESTING MACHINES, Initial Tearing
Scott Co., Henry L.
Suter, Alfred
Testing Machines, Inc.
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Insulation
Associated Research
Biddle Co., Jas. G.
Clough-Brengle Co.
General Elec. Co.
General Radio Co.
Ideal Commutator Dresser
Industrial Insts. Inc.
Leeds & Northrup Co.
Martindale Electric Co.
Miller Co., Bertrand F.
Rawson Electrical Inst.
Rubicon Co.
Scott Co., Henry L.
Shallcross Mfg. Co.
Sticht Co., Inc.
United Transformer Corp.

TESTERS & TESTING MACHINES, Insulation (Thickness)
Comtor Co.
General Elec. Co.
Instrument Specialties Co.

TESTERS & TESTING MACHINES, Jelly
Brabender Corp.
Chatillon & Sons
Fish-Schurman Co.
Saxl Inst. Co.

TESTERS & TESTING MACHINES, Knit Goods (See Textile below)

TESTERS & TESTING MACHINES, Leather
Amthor Testing Inst. Co.
Central Scientific Co.
Olsen Testing Machine
Perkins & Son
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.

MOISTURE CONTENT

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Commercial Engg. Labs.
General Elec Co.
Magnetic Analysis Corp.
Pioneer Instrument
Rawson Elec. Instr. Co.
Rubicon Co.

TESTERS & TESTING MACHINES, Malt
Brabender Corp.
Rieker Instrument Co.

TESTERS & TESTING MACHINES, Mileage (See Meters, Mileage)

TESTERS & TESTING MACHINES, Milk
Central Scientific Co.
Eimer & Amend
Munsell Color Co. Inc.
Rieker Inst. Co.
Ruehfel Co.
Ruth Glass Division
Scientific Glass App.
Testrite Instrument Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Moisture
Alpha-Lux Co.
American Inst. Co.
American Moistening Co.
Brabender Corp.
Cambridge Inst. Co.
Central Scientific Co.
Delmhorst, Wm. J.
Dietert Co.
Eimer & Amend
Exact Weight Scale
Fisher Scientific Co.
Fuess, Inc.
Hart Moisture Gages
Humboldt Mfg. Co.
Industrial Inst. Inc.
Moist-O-Meter, Inc.
Moisture Register Co.
Precision Scientific Co.
Rascher & Betzold
Refinery Supply Co.
Saxl Inst. Co.
Scientific Glass App.
Sci Inst. Co. (of Detroit)
Shallcross Mfg. Co.
Sodeman Heat & Power
Tagliabue Mfg. Co.
Testing Machines, Inc.
Thwing-Albert Inst. Co.
Toledo Scale Co.
Troemner, Henry
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Oil
American Inst. Co.
American M. A. N. Corp.
Brabender Corp.
Central Scientific Co.
Eimer & Amend
Fish-Schurman Co.
Hellige, Inc.
Humboldt Mfg. Co.
Mico Instrument Co.
Precision Scientific Co.
Rieker Inst. Co.
Ruehfel Co.
Ruska & Co.
Ruth Glass Division
Scientific Glass App.
Scientific Inst. Co.
Tagliabue Mfg. Co.
Western Machinery Co.

TESTERS & TESTING MACHINES, Oxygen
Burrell Technical Supply
Eimer & Amend
Sargent & Co.
Scientific Glass App.
Scientific Inst. Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Paint
Akatos, Inc.
Atlas Elec. Devices Co.
Central Scientific Co.
Fish-Schurman Co.
Munsell Color Co.
Ruehfel Co.
Saxl Instr. Co.
Scott Co., Henry L.
Taber Instrument Co.
Van Keuren Co.
Zuhr, Inc., Henry

TESTERS & TESTING MACHINES, Paper
American Inst. Co.
Amthor Testing Inst. Co.
Atlas Elec. Devices
Central Scientific Co.
Eimer & Amend
Federal Prod. Corp.
Ferner Co.
Fuess, Inc.
Gurley, W. & L. E.
Instrument Specialties Co.
Olsen Testing Machine
Perkins & Son
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Speidel & Co.
Steel City Testing
Taber Instrument Co.
Toledo Scale Co.
Van Keuren Co.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Paper Formation
Fuess, Inc.
Paprex Co.
Saxl Inst. Co.
Thwing-Albert Inst. Co.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Paraffin
American Inst. Co.
Perkins & Son
Ruehfel Co.
Tagliabue Mfg. Co.

TESTERS & TESTING MACHINES, Penetration (Paper)
Saxl Inst. Co.
Testing Machines, Inc.
Thwing-Albert Inst. Co.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Petroleum (See Oil above)

TESTERS & TESTING MACHINES, Pipe & Tube
Baldwin-Southwark Corp.
Black & Decker
Olsen Testing Machine

TESTERS & TESTING MACHINES, Pistol Barrel Optical
Fuess, Inc.
Kollmorgen Optical Co.
Lenox Inst. Co.
Scherr Co., Inc.

TESTERS & TESTING MACHINES, Piston Ring

TESTERS & TESTING MACHINES, Pitch
American Inst. Co.
Precision Scientific Co.

TESTERS & TESTING MACHINES, Plasticity
American Inst. Co.
Brabender Corp.
Dietert Co.
Eimer & Amend
Olsen Testing Machine
Precision Scientific Co.
Saxl Inst. Co.
Scott Co., Henry L.
Steel City Testing
Testing Machines, Inc.

TESTERS & TESTING MACHINES, Porosity
Fuess, Inc.
Gurley, W. & L. E.
Ruska & Co., Inc.
Saxl Inst. Co.
Testing Machines, Inc.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Pulp
Brabender Corp.
Perkins & Son
Testing Machines, Inc.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Radio Set
Ferris Instrument Corp.
Hewlett-Packard
Hickok Electrical Inst.
Industrial Instruments
Measurements Corp.
Million Radio & Television
Monarch Manufacturing
RCA Manufacturing
Shallcross Mfg. Co.
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For addresses, see pages 82-91

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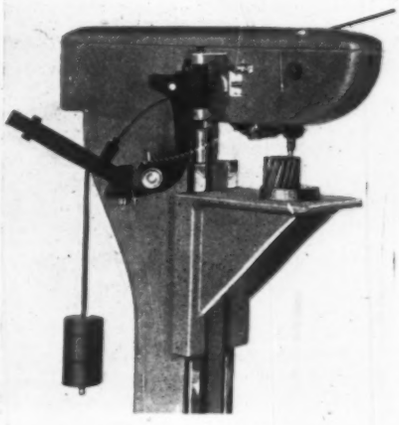

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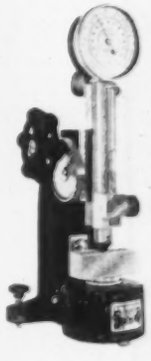

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Rubicon Co.
Shallcross Mfg. Co.
Supreme Instrument Corp.
Tripiett Electrical Inst.
Westinghouse Elec. & Mfg.
Weston Electrical Inst.

TESTERS & TESTING MACHINES Road Material (See Cement above)

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American Inst. Co.
Amthor Testing Inst.
Atlas Elec. Devices
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Eimer & Amend
Emerson Apparatus Co.
Federal Prod. Corp.
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Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Shore Instrument
Suter, Alfred
Steel City Testing
Van Keuren Co.

TESTERS & TESTING MACHINES, Salt Spray
Industrial Filter

TESTERS & TESTING MACHINES, Sand
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Dietert Co.
Eimer & Amend
Exact Weight Scale Co.
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Kolesch & Company

TESTERS & TESTING MACHINES, Scratch Hardness
Dietert Co.
Saxl Inst. Co.
Spencer Lens Co.
Steel City Testing
Taber Instrument Co.
Testing Machines, Inc.

TESTERS & TESTING MACHINES, Shearing
Baldwin-Southwark Corp.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Suter, Alfred

TESTERS & TESTING MACHINES, Sheet Metal
Baldwin-Southwark Corp.
Bock Machine Co.
Detroit Testing Mach.
Krouse Fatigue Machine
Olsen Testing Machine
Riehle Div.
Scott Co., Henry L.
Steel City Testing
Suter, Alfred
Taber Instrument Co.

TESTERS & TESTING MACHINES, Slowness
Saxl Inst. Co.
Testing Machines, Inc.
Williams Apparatus Co.

TESTERS & TESTING MACHINES, Softness
Ferner Co.
Gurley, W. & L. E.
Humboldt Mfg. Co.
Saxl Inst. Co.
Taber Instrument Co.
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Springs
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Chatillon & Sons
Detroit Testing Mach.
Exact Weight Scale
Instrument Specialties Co.
Link Engineering & Mfg.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Steel City Testing Lab.
Suter, Alfred
Toledo Scale Co.

TESTERS & TESTING MACHINES, Stiffness (Paper)
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Ferner Co.
Fuess, Inc.
Olsen Testing Machine
Saxl Inst. Co.
Taber Instrument Co.
Thwing-Albert Inst. Co.
Toledo Scale Co.

TESTERS & TESTING MACHINES, Stiffness & Bending
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Instrument Specialties
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Suter, Alfred
Taber Instrument Co.
Thwing-Albert Inst. Co.
Toledo Scale Co.

TESTERS & TESTING MACHINES, Strain (Glass)
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Baird Associates
Bausch & Lomb Opt.
Eimer & Amend
Fecker, J. W.
Fuess, Inc.
Gaertner Scientific Corp.
General Elec. Co.
Kollmorgen Optical Co.
Pfaltz & Bauer, Inc.
Polarizing Instrument Co.
Zeiss, Inc., Carl

TESTERS & TESTING MACHINES, Stretch
Perkins & Son
Saxl Inst. Co.
Scott Co., Henry L.
Thwing-Albert Inst. Co.
Suter, Alfred

TESTERS & TESTING MACHINES, Tachometer
Amthor Testing Inst.
Biddle Co., Jas. G.
Consol. Ashcroft Hancock
Elec. Tachometer Corp.
General Elec. Co.
Hayward, H. N.
Pioneer Instrument
Standard Elec. Time
Sticht Co., Inc.
Zeiss, Inc., Carl
Zernickow Co., O.

TESTERS & TESTING MACHINES, Tearing-Paper
Saxl Inst. Co.
Scott Co., Henry L.
Speidel & Co.
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Tenderness
American Inst. Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Saxl Inst. Co.

TESTERS & TESTING MACHINES, Textile
American Inst. Co.
Atlas Elec. Devices Co.
Perkins & Son
Saxl Inst. Co.
Scott Co., Henry L.
Suter, Alfred
Taber Instrument Co.
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Thermometer
Amthor Testing Inst.
Consol. Ashcroft Hancock
Fuess, Inc.
G. M. Mfg. Co.
Green, Henry J.
Huddleston, J. S. F.
Moeller Instrument Co.
Ruehfel Co.
Schultheis Corp.
Tagliabue Mfg. Co.
Thwing-Albert Inst. Co.
Weksler Thermometer

TESTERS & TESTING MACHINES, Thread
Boulin Instrument Corp.
Saxl Inst. Co.
Scott Co., Henry L.
Suter, Alfred
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Torsion
Baldwin-Southwark Corp.
Boulin Instrument Corp.
Detroit Testing Mach.
Exact Weight Scale
Hathaway Inst. Co.
Hayes Scientific App.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Steel City Testing
Suter, Alfred
Testing Machines, Inc.
Toledo Scale Co.
Waugh Laboratories

TESTERS & TESTING MACHINES, Torsional Creep
Baldwin-Southwark Corp.
Suter, Alfred

TESTERS & TESTING MACHINES, Turn Indicator
Amthor Testing Inst. Co.
Pioneer Instrument
Rieker Instrument Co.
Ruehfel Co.

TESTERS & TESTING MACHINES, Universal (See Testing Machines, below)

TESTERS & TESTING MACHINES, Vapor Transmission
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Varnish
Atlas Elec. Devices Co.
Eimer & Amend
Fish-Schurman Co.
Hellige, Inc.
Taber Instrument Co.
Thermo-Electric Co.
Zuhr, Inc., Henry

TESTERS & TESTING MACHINES, Vibration
Brush Development Co.
Hathaway Instrument
Heiland Research
RCA Manufacturing

TESTERS & TESTING MACHINES, Voltage
Associated Research
Clough-Brengle Co.
General Elec. Co.
Norton Electrical Inst.
Potter Co.
RCA Manufacturing
Shallcross Mfg. Co.
Weston Elec. Inst. Corp.

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Badger Meter Co.
Exact Weight Scale
Ford Meter Box Co.
Neptune Meter Co.
Toledo Scale Co.

TESTERS & TESTING MACHINES, Water Penetration
Thwing-Albert Inst. Co.

TESTERS & TESTING MACHINES, Watch Rate
Paulson & Co.

TESTERS & TESTING MACHINES, Watthour Meter
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General Elec. Co.
Hathaway Inst. Co.
Sangamo Electric Co.
Standard Elec. Time
States Co.
Western Electro-Mech.
Westinghouse Elec. & Mfg.

TESTERS & TESTING MACHINES, Weathering
Atlas Elec. Devices Co.
Gen. Elec. Lamp. Dept.
National Carbon Co.

TESTERS & TESTING MACHINES, Wire
Amthor Testing Inst. Co.
Baldwin-Southwark Corp.
Krouse Fatigue Mach.
Olsen Testing Machine
Riehle Div.
Rubicon Co.
Saxl Inst. Co.
Scott Co., Henry L.
Steel City Testing
Suter, Alfred
Taber Instrument Co.

TESTERS & TESTING MACHINES, Yarn
Atlas Elec. Devices Co.
Brown Inst. Co.
Emerson Apparatus Co.
Saxl Inst. Co.
Scott Co., Henry L.
Suter, Alfred
Testing Machines, Inc.

TESTING INSTRUMENTS, OPTICAL
Akatos, Inc.
American Askania Corp.
Am. Telescope Labs.
Bausch & Lomb Optical
Fuess, Inc.
Gaertner Scientific Corp.
Jones & Lamson Machine
Kollmorgen Optical Co.
Leitz, Inc.
Ruska & Co.
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TESTING MACHINES UNIVERSAL, Dead weight beam, Capacities 0-100 lb.
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Olsen Testing Machine
Saxl Inst. Co.

TESTING MACHINES, UNIVERSAL, Dead Weight Beam, Capacities 100-5000 lb.
Olsen Testing Machine
Riehle Div.

TESTING MACHINES, UNIVERSAL, Dead weight beam, Capacities 5000-100,000 lb.
Riehle Div.

TESTING MACHINES, UNIVERSAL, Dead weight beam, Capacities over 100,000 lb.
Riehle Div.

TESTING MACHINES, Universal, Hydraulic, Capacities 0-100 lb.
Dietert Co., Harry W.
Saxl Instrument Co., Inc.
Steel City Testing Lab.
Thwing-Albert Instrument

TESTING MACHINES, Universal, Hydraulic, Capacities 100-5000 lb.
Ashton Valve Co.
Baldwin-Southwark Corp.
Detroit Testing Machine
Dietert Co., Harry W.
Emery Co.
Ferner Co.
Pittsburgh Instrument
Riehle Div.
Saxl Instrument Co.
Steel City Testing Lab.

TESTING MACHINES, Universal, Hydraulic, Capacities 5000-100,000 lb.
Baldwin-Southwark Corp.
Detroit Testing Machine
Riehle Div.
Steel City Testing Lab.

TESTING MACHINES, Universal, Hydraulic, Capacities over 100,000 lb.
Baldwin-Southwark Corp.
Riehle Div.

TESTING MACHINES, UNIVERSAL, Pendulum, Capacities 0-100 lb.
Amthor Testing Inst. Co.
Dietert Co.
Olsen Testing Machine
Riehle Div.
Saxl Inst. Co.
Scott Co., Henry L.
Steel City Testing
Suter, Alfred

TESTING MACHINES, UNIVERSAL, Pendulum, Capacities 100-5000 lb.
Amthor Testing Inst. Co.
Dietert Co.
Olsen Testing Machine
Riehle Div.
Scott Co., Henry L.
Steel City Testing
Suter, Alfred
Testing Machines, Inc.

TESTING MACHINES, UNIVERSAL, Pendulum, Capacities 5000-100,000 lb.
American M. A. N. Corp.
Olsen Testing Machine
Riehle Div.
Steel City Testing
Suter, Alfred

TESTING MACHINES, UNIVERSAL, Pendulum, Capacities over 100,000 lb.
American M. A. N. Corp.
Olsen Testing Machine
Riehle Div.
Steel City Testing
Suter, Alfred

TESTING MACHINES, UNIVERSAL, Spring Dynamometers, Capacities 0-100 lb.
Baldwin-Southwark Corp.
Chatillon & Sons
Saxl Inst. Co.
Scott Co., Henry L.
Toledo Scale Co.

TESTING MACHINES, UNIVERSAL, Spring Dynamometers, Capacities 100-5000 lb.
Baldwin-Southwark Corp.
Dillon & Co.
Dietert Co.
Dorr-Patterson Eng.
Scott Co., Henry L.
Toledo Scale Co.

TESTING MACHINES, UNIVERSAL, Spring Dynamometers, Capacities 5000-100,000 lb.
Baldwin-Southwark Corp.
Riehle Div.
Scott Co., Henry L.
Toledo Scale Co.

TESTING MACHINES, UNIVERSAL, Spring Dynamometer, Capacities over 100,000 lb.
Baldwin-Southwark Corp.
Toledo Scale Co.

TESTING SETS (See also object of measurement and control)

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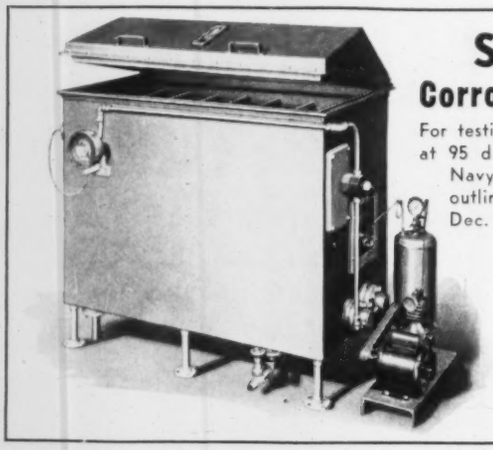
Precision Therm.
Rascher & Betzold
Ruehfel Co.
Scientific Glass App.
Tagliabue Mfg. Co.

TESTING SETS, Automotive
Clough-Brengle Co.
Engelhard, Chas.
Gow-Mac Instrument
Hays Corp.
Hy-Ef Electrical Prod.
Niehoff & Co.
Potter Co.

TESTING SETS, Current Transformer
Eastern Specialty Co.
Elec. Facilities Inc.
Leeds & Northrup
Rubicon Co.
West. Electro-Mechanical



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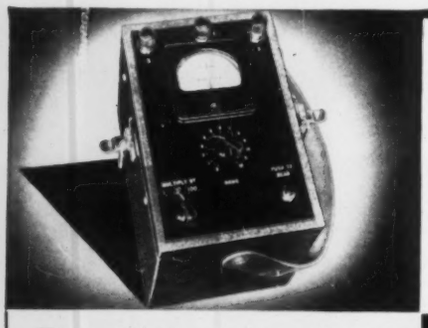

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ASSOCIATED RESEARCH, INC.
MFRS. KEELER POLYGRAPH—THE "LIE DETECTOR"
431 SOUTH DEARBORN STREET • CHICAGO

For addresses, see pages 82-91

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American Transformer
Associated Research
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General Elec. Co.
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Superior Electric Co.
Tobe Deutschmann Corp.
West. Electro-Mechanical
Weston Elec. Inst. Corp.

TESTING SETS, Electrical Thermometer
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Rubicon Co.
Shallcross Mfg. Co.
Tagliabue Mfg. Co.
Thwing-Albert Instrument

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Associated Research
Biddle Co., Jas. G.
Heiland Research
Industrial Inst., Inc.
Niagara Elec. Inst.
Roller-Smith Co.
Sensitive Research Inst.
Shallcross Mfg.
Sticht Co., Inc.

TESTING SETS, Insulation
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Associated Research, Inc.
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Hickok Electrical Inst.
Ideal Commutator Dresser
Industrial Instruments
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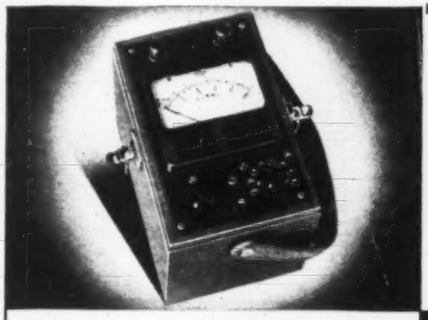

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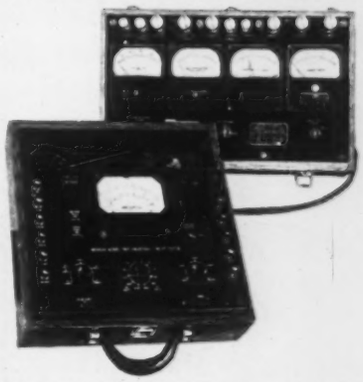

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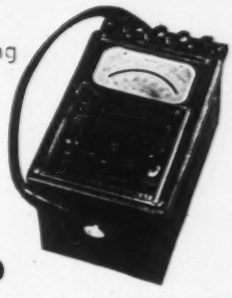

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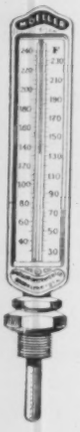

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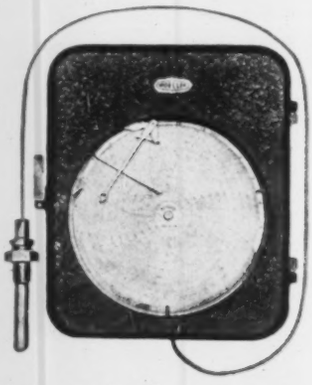

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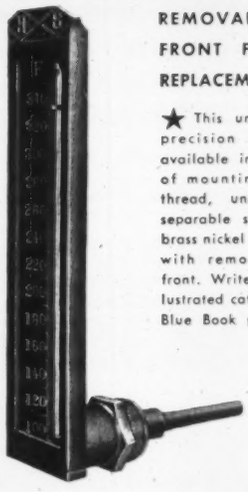

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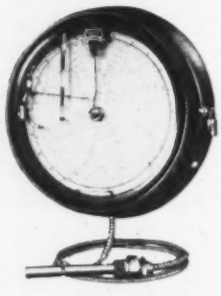

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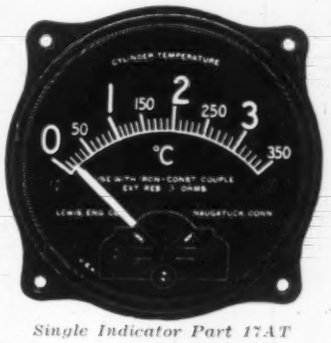
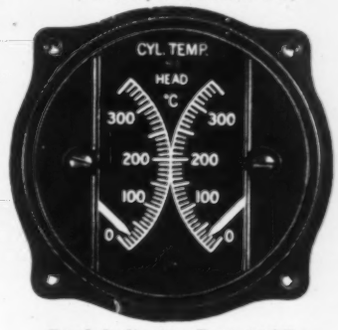
ENGINE CYLINDER TEMPERATURE INDICATORS—THERMOCOUPLE TYPE

(Write for Bulletin 1-2)



Single Indicator Part 17AT



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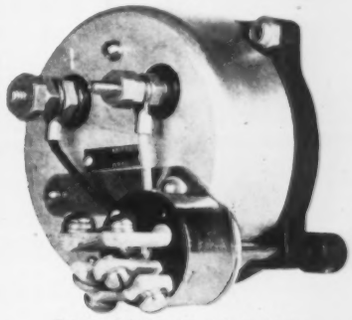

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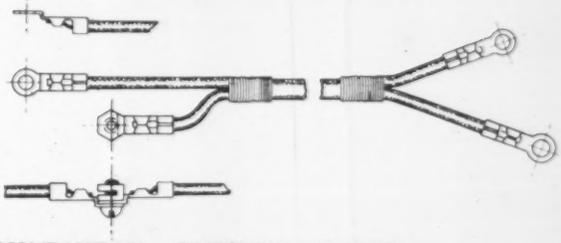

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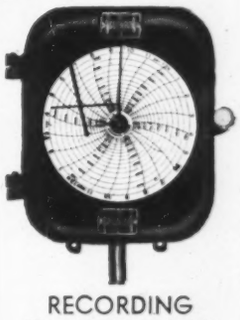

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Penn Electric Switch
Perfex Corp.
Philadelphia Thermometer
Powers Regulator Co.
Precision Scientific Co.
Precision Therm. & Inst.
Ranco, Inc.
Rascher & Betzold
Robertshaw Thermostat
(Cont'd)

THERMOSTATS (Cont'd)
Scientific Glass App.
Spencer Thermostat Co.
Standard Therm., Inc.
Supreme Elec. Prods.
Tagliabue Mfg. Co.
Ulanet Co.
Wilcolator Co.

THERMOSTATIC METALS (See Metals, Thermostatic)

THERMO-VOLTMETERS (See Voltmeters, Thermo)

THICKNESS GAGES (See Gages, Thickness)

THREAD MEASURING WIRES (See Wires, Thread Measuring)

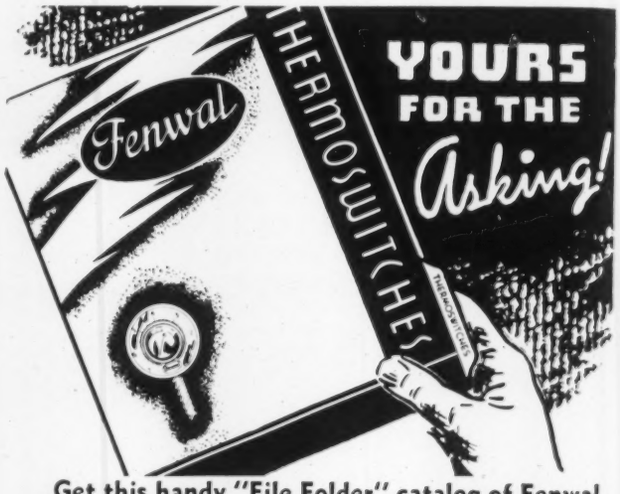
TIDE GAGES
American Inst. Co.
Ballauf Mfg. Co.
Fuess, Inc.
Gurley, W. & L. E.
Leupold, Volpel & Co.
Uehling Inst. Co.

TIME, Controllers (See Controllers, Automatic, Time)

TIME Indicators
Bristol Co.
Fuess, Inc.
Gaertner Scientific Corp.
Gotham Inst. Co.
Industrial Timer
Jaeger Watch Co.
National Time & Signal
Paragon Electric Co.
(Cont'd)

TIME, Indicators (Cont'd)
Rawson Electrical Inst.
Stromberg Electric Co.
Tagliabue Mfg. Co.
Thompson Clock Co.

TIME, Recorders
Am. Automatic Electric
Bristol Co.
Cramer & Co., Inc.
Esterline-Angus Co.
Friez & Sons
Fuess, Inc.
Gaertner Scientific Corp.
Gotham Inst. Co.
Jaeger Watch Co.
Paragon Electric Co.
Scientific Inst. Co.
Seely Instrument Co.
Service Recorder Co.
Simplex Time Recorder
Stromberg Electric Co.
Tagliabue Mfg. Co.



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Various types, developed for particular requirements, are fully described and illustrated. Write today on company letterhead for your copy.

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ASHLAND, MASSACHUSETTS
Fenwal
INCORPORATED

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A paramount issue of the Day

Palmer Thermometers, made with extreme care, by skilled American workmen, mean extra life to these instruments, and fewer repairs.

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And "Red-Reading-Mercury" . . . the easy to read RED column, costs you no extra. Buy thermometers that will give you real service.

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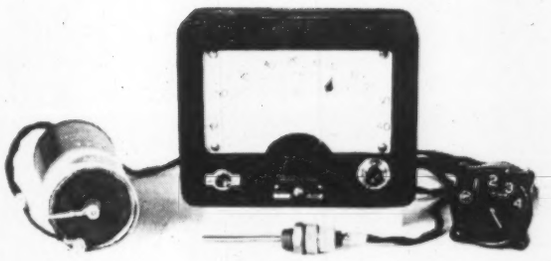
THE PALMER CO., Mfgrs.

Industrial, Laboratory, Dial and Recording Thermometers

2511 Norwood Ave., Cincinnati, Norwood, Ohio — Canadian plant: King & George Sts., Toronto

For addresses, see pages 82-91



PYROMETERS—RESISTANCE THERMOMETERS

All have 6" scales, are extremely rugged, may be mounted in any position. They are uneffected by vibration and changes in ambient temperature. They are standard temperature test equipment for use in aircraft, trucks, tanks, and all vehicles while in motion.

Model 58PY Pyrometer, Bulletin 8-5
Model 62RT Resistance Thermometer, Bulletin 9-2

THE LEWIS ENGINEERING CO., Naugatuck, Connecticut

TIME INTERVAL APPARATUS
Am. Gas Accumulator
American Timer Corp.
Barber-Coleman
Betts & Betts
Builders-Providence
Coleman Elec. Co.
Cramer & Co., Inc.
Edison Electrical Controls
General Electric X-Ray
Guardian Elec. Mfg. Co.
Marston Co.
National Time & Signal
Paragon Electric Co.
Perfex Corp.
Standard Elec. Time Co.
(Cont'd)

TIME INTERVAL APPARATUS (Cont'd)
Stromberg Electric Co.
Thompson Clock Co.
United Cellophone Corp.
Walser Automatic Timer
Warren Telechron Co.
Westinghouse Elec. & Mfg.
Zenith Electric Co.

TIME METERS (See meters, time)

TIME OPERATION, Recorders
Am. Automatic Electric
Automatic Time Stamp
Bristol Co.
(Cont'd)

TIME OPERATION, Recorders (Cont'd)
Brown Inst. Co.
Calculagraph Co.
Cincinnati Time Rec.
Cramer & Co., Inc.
Elec. Tachometer Corp.
Elematic Sales Corp.
Esterline-Angus Co.
Gaertner Scientific Corp.
General Elec. Co.
Gotham Inst. Co.
Intern'l Business Mach.
Jaeger Watch Co.
Manning, Maxwell & Moore
(Cont'd)

TIME OPERATION, Recorders (Cont'd)
Marston Co.
National Time & Signal
Paragon Electric Co.
Practical Instrument Co.
Production Inst. Co.
Seely Instrument Co.
Service Recorder Co.
Tagliabue Mfg. Co.

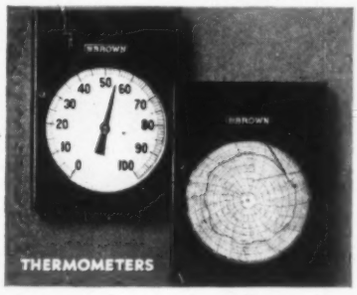
TIME STAMPS
Automatic Time Stamp
Cincinnati Time Rec.
Intern'l Business Mach.
Simplex Time Recorder
Stromberg Electric Co.

TIME STUDY APPARATUS
Automatic Temperature
Automatic Stamp Co.
Clare & Co., C. P.
Dietzgen Co., Eugene
Electric Tachometer Corp.
Hasler-Tel Co.
National Instrument Co.
Seely Instrument Co.
Standard Electric Time Co.

TIME SWITCHES (See Switches, Time)

TIMERS, AUTOMATIC, Automatic Reset
Abrams Instrument
Am. Gas Accumulator
Automatic Elec. Mfg.
(Cont'd)

TIMERS, AUTOMATIC, Automatic Reset (Cont'd)
Automatic Temp. Control
Betts & Betts
Bristol Co.
Cramer & Co., Inc.
Eagle Signal Corp.
Edison Electrical Controls
Guardian Elec. Mfg. Co.
Industrial Timer
Mason-Neilan Regulator
National Time & Signal
Paragon Electric Co.
Production Inst. Co.
Stromberg Electric Co.
Struthers-Dunn
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Zenith Electric Co.



For Controlling, Recording and Indicating Temperatures from —40°F to +1200°F.

A pressure type, remote bulb type thermometer, consisting of instrument, bulb and connecting tubing completely assembled as one unit. Can be furnished with connecting tubing lengths up to 200 feet.

Charts and scales for a wide variety of ranges are available, from a minimum temperature span of 75°F to a maximum span of 1200°F. Corresponding Centigrade scales and charts are also available.

Controllers and recorders furnished with a 12" or a 10" diameter chart. Indicators are equipped with a 26" concentric or a 7½" eccentric scale. Three kinds of thermal systems are available: vapor-filled, gas-filled, and mercury-filled.

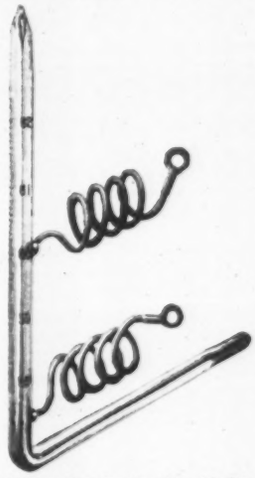
Bulbs, sockets and connecting tubing can be furnished in various styles and material to meet the requirements of each individual job.

Write for Catalog 6706. THE BROWN INSTRUMENT COMPANY, *a division of Minneapolis-Honeywell Regulator Co.*, 4482 Wayne Avenue, Philadelphia, Pa.

BROWN THERMOMETERS
AND
MINNEAPOLIS-HONEYWELL CONTROL SYSTEMS
To Measure and Control is to Economize

For Extremely Close Temperature Control

Visual-Stats

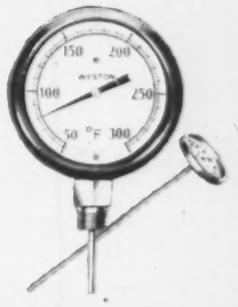


● Sensitivity of a hundredth of a degree is easily attainable. ● Top of mercury column visible at control point (where most important) because electrodes terminate at back of tube. No encircling metal bands! ● Available in angle form (illustrated) or conventional straight form. ● Send for brief, attractive bulletin.

The Philadelphia Thermometer Co.
915 Filbert Street -:- Philadelphia
Oldest Thermometer Manufacturer in Philadelphia

READABLE, RUGGED
ALL-METAL

THERMOMETERS



Rugged, all-metal construction simplifies installation and keeps breakage at a minimum. Large gauge-type scales facilitate accurate reading. Industrial models available in both straight and angle stem types . . . accuracy within 1% . . . stem lengths up to 24". Accuracy of laboratory type ½ of 1%. Bulletin available. Weston Electrical Instrument Corporation, 591 Frelinghuysen Ave., Newark, N. J.

WESTON *Instruments*

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A complete line of Indicating and Recording Instruments from the precision mercury-in-glass thermometer to the modern CELECTRAY Pyrometer for laboratory and plant service. By virtue of simple and practical design, rugged construction and precise response to the slightest temperature change within their range, TAG Thermometers are the natural choice for economical supervision of temperatures in your plant.

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Park & Nostrand Avenues, Brooklyn, N. Y.

LOOK INSIDE the COVER (Part 1) *See How* **TAG RECORDERS** *Save You Money* **TAG**

For addresses, see pages 82-91

TIMERS, AUTOMATIC, Cycle
Abrams Instrument
Am. Gas Accumulator
Autocall Co.
Automatic Temp. Control
Barber Coleman
Betts & Betts
Bristol Co.
Brown Inst. Co.
Controls, Inc.
Cramer & Co., Inc.
Eagle Signal Corp.
Elec. Switch Corp.
Foxboro Co.
Hanlon Waters, Inc.
Industrial Timer
Manning, Maxwell & Moore
Minneapolis-Honeywell
National Time & Signal
Paragon Electric Co.
Penn Electric Switch
Sangamo Electric Co.
Seely Instrument Co.
Stromberg Electric Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Thomas Clock Co.
Thompson Clock Co.
Walser Automatic Timer
West. Electro-Mechanical
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
Wheelco Inst. Co.
Zenith Electric Co.

TIMERS, AUTOMATIC, Interval
Abrams Instrument
Am. Gas Accumulator
Am. Timer Corp.
Anderson, A. & J. M.
Automatic Elec. Mfg.
Automatic Temp. Control
Bacon Electric Timer
Betts & Betts
Bristol Co.
Controls, Inc.
Cramer & Co., Inc.
Eagle Signal Corp.
Edison Electrical Controls
Elec. Switch Corp.
Fink-Roselieve Co.
General Electric X-Ray
Glogau & Co.
Guardian Elec. Mfg.
Hankscraft Co.
Heiland Research
Industrial Engr. Corp.
Industrial Timer Corp.
Luers, J. Milton
Minneapolis-Honeywell
National Time & Signal
Paragon Electric Co.
Perfex Corp.
Photovolt Corp.
Production Inst. Co.
Standard Elec. Time
Stromberg Electric Co.
Struthers-Dunn
Tagliabue Mfg. Co.
Thomas Clock Co.
Thompson Clock Co.
Walser Automatic Timer
Zenith Electric Co.

TIMERS, AUTOMATIC, Process
Am. Gas Accumulator
Autocall Co.
Automatic Elec. Mfg.
Automatic Temp. Control
Barber Coleman
Betts & Betts
Bristol Co.
Controls, Inc.
Cramer & Co., Inc.
Denver Fire Clay
Eagle Signal Corp.
Electric Controller
Elec. Switch Corp.
Foxboro Co.
Gaertner Scientific Corp.
Industrial Engr. Corp.
Magnetic Gauge Co.
Manning, Maxwell & Moore
National Time & Signal
Paragon Electric Co.
Powers Regulator Co.
Seely Instrument Co.
Stromberg Electric Co.
Struthers-Dunn
Tagliabue Mfg. Co.
Taylor Inst. Cos.
United Cinephone Corp.
West. Electro-Mechanical
Weston Elec. Inst. Corp.
Woermann-Schuchhardt
Zenith Electric Co.

TIMERS, AUTOMATIC, Spot Weld
Allen-Bradley Co.
Am. Gas Accumulator
Cramer & Co., Inc.
Cutler-Hammer, Inc.
Electric Controller
General Elec. Co.
Industrial Timer
National Time & Signal
United Cinephone Corp.

TITRATION APPARATUS, Electrometric
Burrell Technical Supply
Cambridge Instrument Co.
Central Scientific Co.
Coleman Electric Co.
Fisher Scientific Co.
Leeds & Northrup Co.
National Technical Labs.
Rubicon Co.
Sargent & Co., E. H.
Thomas Co., Arthur H.
Welch Mfg. Co.

TOOLMAKER'S FLATS
Bausch & Lomb Opt.
Fecker, J. W.
Pratt & Whitney
Ruska & Co.
Van Keuren Co.
Zeiss, Inc., Carl

TOPOGRAPHIC INSTRUMENTS (See Surveying Instruments)

TORQUE GAGES (See Gages, Torque)

TORQUE MEASURING EQUIPMENT
Wa.gh Laboratories

TORSIOGRAPH
Baldwin-Southwark Corp.
Commercial Engr. Labs.

TORSION METERS
Boulin Inst. Corp.
Cummings Mach. Works
Kurman Electric Co.
McNab of Bridgeport
Riehle Div.
Saxl Inst. Co.
Toledo Scale Co.

TOTALIZERS, Demand
American Meter Co.
General Elec. Co.
Therm-Electric Meters Co.
United Cinephone Corp.
Westinghouse Elec. & Mfg.

TOTALIZERS, Electric Energy
Autocall Co.
Esterline-Angus Co.
General Elec. Co.
Therm-Electric Meters Co.
Westinghouse Elec. & Mfg.

TOTALIZERS, Fluid Flow
American Meter Co.
Bailey Meter Co.
Brown Inst. Co.
Fischer & Porter
Foxboro Co.
Henszey Co.
Leupold, Volpel & Co.
Mason-Neilan Regulator
Republic Flow Meters
Tagliabue Mfg. Co.
Taylor Inst. Cos.

TOTALIZERS, Gas Flow
American Meter Co.
Fischer & Porter

TOTALIZERS, Running Time
Cramer & Co., Inc.
Elec. Tachometer Corp.
Photoswitch, Inc.
Production Instrument
United Cinephone Corp.
Westinghouse Elec. & Mfg.

TRAFFIC SIGNALING DEVICES (See Signaling Devices, Traffic)

TRAMMELS, Steel Beam
Union Tool Co.

TRANSFORMERS, Adjustable
General Radio Co.
Superior Electric Co.

TRANSFORMERS, Constant Voltage
Sola Electric Co.

TRANSFORMERS, Experimenter's Variable Voltage
Dongan Electric Mfg.

TRANSFORMERS, Instrument
Amplifier Co.
Annis Co.
Associated Research
Columbia Elec. Mfg.
Davis & Co.
Dongan Electric Mfg.
Elec. Facilities, Inc.
Esterline-Angus Co.
Friez & Sons
General Elec. Co.
Hickok Elec. Inst. Co.
Industrial Engr. Corp.
Lipman Engg. Co.
Miller Co., Bertrand F.
Nothelfer Winding Labs.
Rolls-Smith Co.
Sangamo Electric Co.
Thordarson Elec. Co.
United Transformer Corp.
West. Electro-Mechanical
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

TRANSFORMERS, Insulation Testing
Campbell Electric
Dongan Electric Mfg.
Nothelfer Winding Labs.

TRANSFORMERS, Laboratory
American Transformer
Amplifier Co.
Burrell Tech. Supply
Central Scientific Co.
Clough-Brengle Co.
Daven Co.
Davis & Co.
Dongan Electric Mfg.
Eastern Specialty Co.
Elec. Facilities, Inc.
General Elec. Co.
General Radio Co.
Halldorson Co.
Standard Elec. Prods.
Miller Co., Bertrand F.
Nothelfer Winding Labs.
Raytheon Mfg. Co.
Sola Electric Co.
Superior Electric Co.
Thordarson Elec. Co.
United Transformer Corp.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

TRANSFORMERS, Phasing
Davis & Co.
Dongan Electric Mfg.
Eastern Specialty Co.
Stan Co.
Thordarson Mfg. Co.
United Transformer Corp.
Westinghouse Elec. & Mfg.

TRANSFORMERS, Power
Amplifier Co.
Ferranti Electric

TRANSFORMERS, Split Core
Annis Co.
Davis & Co.
Elec. Facilities, Inc.
General Elec. Co.
H-D Elec. Co.
Industrial Eng. Corp.
Roller-Smith Co.
Rubicon Co.
Sangamo Electric Co.
Thordarson Elec. Co.
United Transformer Corp.
Western Electro-Mech.
Westinghouse Elec. & Mfg.

TRANSFORMERS, Variable Voltage Testing
American Transformer
Dongan Electric Mfg.
Superior Electric Co.

TRANSITS, Astronomical
American Askania Corp.

TRANSITS, Engineer's (See Surveying Instruments)

TRANSITS, Pocket
Ainsworth & Sons
Keuffel & Esser Co.
Mico Instrument Co.
Speidel & Co.
Warren-Knight Co.
White Co., Inc.

TRUCK MILEAGE RECORDERS (See Meters, Mileage)

TRUCK-TIME RECORDERS
Cramer & Co., Inc.
Durant Mfg. Co.
Knopf, Paul
Ohmer Register Co.
Service Recorder Co.

TRUCK, TIME & MILEAGE RECORDERS
Cramer & Co., Inc.
Ohmer Register Co.
Sangamo Electric Co.

TUBES (See also Gas & Vapor Discharge Tubes)

TUBES, Cathode Ray (See Cathode Ray Tubes)

TUBES, Nessler (See Nessler Tubes)

TUBES, Oil Centrifuge (See Oil Centrifuge Tubes)

TUBES, Photoelectric
Continental Electric Co.
General Electric Co.
General Scientific Corp.
Photobell Corp.
RCA Manufacturing
United Cinephone Corp.
Vacutron, Inc.

TUBES, Pitot (See Flowmeters, Pitot Tube)

TUBES, Polariscope
Akatos, Inc.
American Inst. Co.
Bausch & Lomb Optical
Central Scientific Co.
Eimer & Amend
Fecker, J. W.
Gaertner Scientific Corp.
Hellige, Inc.
Jarrell-Ash Co.
Precision Scientific Co.
Sargent & Co.
Woermann-Schuchhardt

TUBES, Precision Bore (See Precision Bore Glass Tubing)

TUBES, Pyrometer
Bristol Co.
Brown Inst. Co.
Eitzen Co.
Elematic Sales Corp.
Fish-Schurman Corp.
Hoskins Mfg. Co.
Illinois Testing Labs.
Leeds & Northrup Co.
Tagliabue Mfg. Co.
Taylor Instrument Cos.

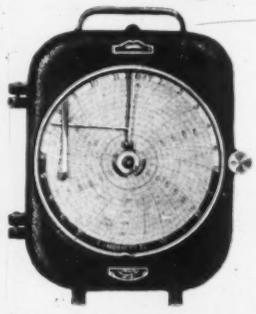
TUBES, Spectrum (See Spectrum Tubes)

TUBES, Ultra-Violet Light (See Ultra-Violet Light Sources)

TUBES, Vacuum
Arcturus Radio Tube Co.
Central Scientific Co.
Federal Telegraph
Fredericks, George
General Elec. Co.
General Scientific Corp.
General Television Corp.
Raytheon Mfg. Co.
RCA Manufacturing Co.
Vacutron, Inc.
Wheelco Inst. Co.

TUBES, Venturi (See Flowmeters, Venturi)

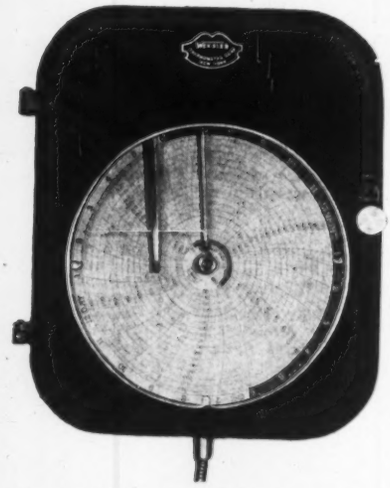
WEKSLER
At Your Service!



Left:
Portable Recorder
6 inch Chart
24 hour Clock

Right:
Dial Thermometer
In 3½, 4, 4½, 5 and
6 inch Dial Sizes

Catalog 115
Type 103
Bronze Case,
Glass Front,
Industrial



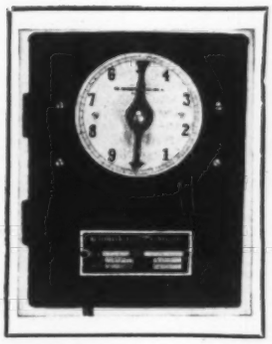
Catalog 115
Laboratory
Thermometers
and
Hydrometers

RECORDING THERMOMETERS
Furnished with 6", 10" or 12" Charts

For information on
Dial and Recording Thermometers, send
for Catalog 300 DR
For others, send for Catalog No. 115.

Weksler Thermometer Corporation
52-56 WEST HOUSTON STREET, NEW YORK, N. Y.

For addresses, see pages 82-91



"Automatic"
TIME
CONTROL DEVICES

Models for
Any desired time cycle
Any function specified
Any performance wanted

PROCESS TIMERS

INTERVAL TIMERS, or PROCESS TIMERS, are furnished in two types. One is reset by hand (manually); other resets itself automatically. Both types can be provided for practically any cycle of time, fully adjustable from zero to maximum period. SYNCHRONOUS, SELF-STARTING MOTORS.

SIGNAL TIMERS

Used extensively for starting and stopping industrial work; school class periods; for municipal time signals, etc. Up to six signal periods, permanently set at factory with Sunday & Holiday Cutout and Manual Control, at a price of only $35.

TIME SWITCHES

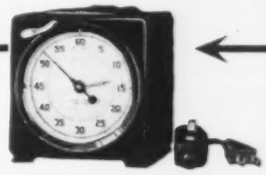
Triple Pole • Double Pole • Single Pole

All three types can be furnished with capacities ranging from 20 TO 200 AMPERES PER POLE, from $12.00 up. Ten ampere Time Switches from $3.95 up.

Write for Information

AUTOMATIC ELECTRIC MFG. CO.
MANKATO, MINNESOTA

Conserve Laboratory "Man-Hours"
WITH THIS
AUTOMATICALLY - CONTROLLED TIMER!



STANDARD ELECTRIC STOP CLOCK

● During these days of rapid production, precision timing tests cannot lag—in speed or in accuracy. Standard Electric Stop Clocks, through automatic measurement of time intervals, release man power for other duties during the test period. What's more, the accuracy of testing is increased by the elimination of the human error. Several models, ranging in measurement intervals from .01 second to one hour—adaptable to all types of industrial timing. Large dial, easy to read. Rugged, trouble-proof construction throughout. For literature and details of 30-day FREE Trial Offer write

THE STANDARD ELECTRIC TIME COMPANY
75 Logan St., Springfield, Mass. Branch Offices in Principal Cities
"STANDARD MAKES EVERY SPLIT-SECOND COUNT"

TUBES, X-Ray
American Inst. Co.
Baird Associates
Corning Glass Works
General Electric X-Ray
Jarrell-Ash Co.
Kelley-Koett Mfg.
Westinghouse X-Ray Co.
Wyland, George

TUNING FORKS, Electrically Driven (See Forks, Tuning)

TURBIDIMETERS
Akatos, Inc.
American Inst. Co.
Cargille, R. P.
Central Scientific Co.
Eimer & Amend
Ess Instrument Co.
Fisher Scientific Co.
Hellige, Inc.
Klett Mfg. Co.
Kimble Glass Co.
Parr Instrument Co.
Pfaltz & Bauer, Inc.
Photoswitch, Inc.
Photovolt Corp.
Precision Scientific Co.
Rawson Electrical Inst.
Rubicon Co.
Sensitive Research Inst.
Zeiss, Inc., Carl

TURN & BANK INDICATORS
Kollsman Inst. Co.
Pioneer Instrument

TURN INDICATOR TESTERS (See Testers, Turn Indicator)

TWIST COUNTERS (See Counters, Twist)

ULTRA-VIOLET INDICATORS & RECORDERS
Gen. Elec. Lamp Dept.
Hanovia Chem. & Mfg. Co.

ULTRA-VIOLET LIGHT SOURCES (See Light Sources)

U-TUBE MANOMETERS (See Manometers)

VACUUM GAGES, Hot-Wire
Baird Associates
Continental Elec. Co.
Fuess, Inc.
General Elec. Co.
Xervac Inst. Co.

VACUUM GAGES, Ionization
Fredericks, George
General Elec. Co.
General Television Corp.

VACUUM GAGES, Liquid-column
American Meter Co.
Bacharach Industrial Inst.
Defender Automatic Reg.
Dubrovin, John
Gas Appliance Specialties
Lantz-Phelps Corp.
Meriam Co.
Moeller Inst. Co.
Pioneer Instrument
Precision Therm. & Inst.
Scientific Glass Apparatus
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Uehling Instrument Co.

VACUUM GAGES, McLeod
Ace Glass, Inc.
Central Scientific Co.
Eimer & Amend
General Elec. Co.
General Physical Lab.
Macalaster Bicknell Co.
Scientific Glass Apparatus
Stokes Machine Co.
Welch Mfg. Co.

VACUUM GAGES, Pirani Type
Distillation Products

VACUUM, Indicators
American Meter Co.
Ashton Valve Co.
Bailey Meter Co.
Baird Associates
Bristol Co.
Brown Inst. Co.
Central Scientific Co.
Clapp Instrument
Eimer & Amend
Foxboro Co.
Fredericks, George
General Elec. Co.
Kollsman Inst. Co.
Manning, Maxwell & Moore
Marsh Corp.
Mason-Neilan Regulator
Moeller Instrument Co.
Pioneer Instrument
Potter Co.
Precision Therm.
Rawson Electrical Inst.
Republic Flow Meters
Rochester Mfg. Co.
Scientific Glass Apparatus
Star Brass Mfg. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Uehling Instrument Co.

VACUUM, HIGH (below 1 mu) Controllers, Indicators & Recorders
Baird Associates
Continental Elec. Co.
Eimer & Amend
Electronic Prod. Co.
General Elec. Co.
General Physical Lab.
Welch Mfg. Co.

VACUUM RECORDERS
American Meter Co.
Ashton Valve Co.
Bailey Meter Co.
Bristol Co.
Brown Inst. Co.
Dickson Co.
Esterline-Angus Co.
Foxboro Co.
Fredericks, George
Manning, Maxwell & Moore
Marsh Corp.
Mason-Neilan Regulator
Republic Flow Meters
Scientific Instrument Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Uehling Instrument Co.

VACUUM SPECTROGRAPHS (See Spectrographs, Vacuum)

VACUUM TUBES (See Tubes, Vacuum)

VACUUM TUBE BRIDGES (See Bridges, Vacuum Tube)

VACUUM TUBE RELAYS (See Relays, Vacuum Tube)

VACUUM TUBE VOLTMETERS (See Voltmeters, Vacuum Tube)

VALVE BOX FINDER (See Finder, Valve Box)

VALVE-OPERATING DEVICES, Electric Motor
Baldwin-Southwark Corp.
Barber-Coleman Co.
Beck Co.
Brown Inst. Co.
Cramer & Co., Inc.
Cutler-Hammer, Inc.
Dickson Co.
Foxboro Co.
General Controls Co.
Hays Corp.
Illinois Eng. Co.
Jenkins Bros.
McAlear Mfg. Co.
Ruggles-Klingemann
Tagliabue Mfg. Co.

VALVE OPERATING DEVICES, Electric Solenoid (See Valves, Solenoid)

VALVE OPERATING DEVICES, Hydraulic (See Valves, Hydraulically Operated)

VALVE-OPERATING DEVICES, Pneumatic (See Valves, Diaphragm)

VALVE POSITION INDICATORS
Autocall Co.
Automatic Temp. Control
Bailey Meter Co.
Barber Coleman
Beck Co.
Bendix Marine Products
Builders-Providence
Elec. Indicator Corp.
Elec. Tachometer Corp.
Foxboro Co.
General Regulator Corp.
Hanlon-Waters, Inc.
Leupold, Volpel & Co.
Manning, Maxwell & Moore
Merco Nordstrom Valve
Northern Equip. Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Tefft-Jackson, Inc.
Westinghouse Elec. & Mfg.

VALVES, Automatic Shut-off
Automatic Switch Co.
Automatic Valve Control
Barber Coleman
Bellfield Co.
Brown Inst Co.
Davis Reg. Co.
Fisher Governor Co.
Foster Engg. Co.
Frick Co.
Friez & Sons
General Controls Co.
General Sales & Prod.
Hanlon-Waters, Inc.
Jerguson Gage Co.
Kiely & Mueller
McAlear Mfg. Co.
McDonnell & Miller
Merco Nordstrom Valve
Minneapolis-Honeywell
Partlow Corp.
Ruggles-Klingemann
Payne Furnace & Supply
Schade Valve Mfg. Co.
Tagliabue Mfg. Co.
Wilgus Mfg. Co.

VALVES, Automatic Solenoid
(See Valves, Solenoid)

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For addresses, see pages 82-91

FOXBORO

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Foxboro valves for air-operated controllers should be specified with Foxboro Controllers because the characteristic of the Valve should fit the characteristic of the instrument. The Valve is a vital part of a Control installation. The Foxboro line is engineered to assure the best results.

For complete information write for Bulletin No. A277. **The Foxboro Company, 46 Neponset Avenue, Foxboro, Massachusetts, U. S. A.** Branch offices in principal cities of the United States and Canada.

VALVES, Balanced
American Meter Co.
Atlas Valve Co.
Bailey Meter Co.
Barber Coleman
Belfield Co.
Boylston Co.
Bristol Co.
Cash Co.
Cochrane Corp.
Connelly Iron Sponge
Davis Reg. Co.
Defender Automatic Reg.
D'Este Co.
Fisher Governor Co.
Ford Reg. Valve Co.
Foster Engg. Co.
General Controls Co.
Hanlon-Waters, Inc.
Illinois Eng. Co.
Jenkins Bros.
Kiely & Mueller
Klipfel Mfg. Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Minneapolis-Honeywell
Natural Gas Equipment
Northern Equip. Co.
Powers Regulator Co.
Republic Flow Meters
Reynolds Gas Regulator
Ruggles-Klingemann
Schade Valve Mfg. Co.
Seely Instrument Co.
Spence Engineering Co.
Tagliabue Mfg. Co.
Watts Regulator Co.
Wilgus Manufacturing

VALVES, Constant Pressure
Bailey Meter Co.
Belfield Co.
Cash Co.
Connelly Iron Sponge
Davis Reg. Co.
D'Este Co.
Fisher Governor Co.
Foster Engg. Co.
Hanlon-Waters, Inc.
Hoke, Inc.
Jenkins Bros.
Klipfel Mfg. Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Northern Equipment
Powers Regulator Co.
Refrigerating Spec. Co.
Reynolds Gas Regulator
Ruggles-Klingemann
Schade Valve Mfg. Co.
Spence Engineering Co.
Tagliabue Mfg. Co.
Vaughn-G E. Witt Co
Wilgus Manufacturing

VALVES, Diaphragm
Askania Regulator Co.
Atlas Valve Co.
Bailey Meter Co.
Bastian-Blessing Co.
Belfield Co.
Boylston Co.
Bristol Co.
Brown Inst. Co.
Cash Co.
Connelly Iron Sponge
Davis Reg. Co.
Defender Automatic Reg.
D'Este Co.
Fisher Governor
Foster Engg. Co.
Foxboro Co.
General Controls Co.
Hanlon-Waters, Inc.
Illinois Eng. Co.
Johnson Service Co.
Kiely & Mueller
Klipfel Mfg. Co.
Leslie Co.
Manning, Maxwell & Moore
Mason-Neilan Regulator
McAlear Mfg. Co.
McCorkle Co.
Minneapolis-Honeywell
National Airoil Burner
Natural Gas Equipment
Partlow Corp.
Payne Furnace & Supply
Powers Regulator Co.
Refrigerating Spec. Co.
Republic Flow Meters Co.
Reynolds Gas Regulator
Ruggles-Klingemann
Schade Valve Mfg. Co.
Scientific Instrument Co.
Seely Instrument Co.
Spence Engineering Co.
Spencer Thermostat Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Vaughn-G E. Witt
White-Rodgers Electric
Wilgus Manufacturing

VALVES, Electrically Operated
Atkins & Co.
Atlas Valve Co.
Automatic Products Co.
Automatic Switch Co.
Automatic Temp. Control
Barber Coleman
Bristol Co.
Brown Inst. Co.
Cochrane Corp.
Cutler-Hammer, Inc.
Davis Reg. Co.
(Cont'd)

VALVES, Electrically Operated (Cont'd)
Defender Automatic Reg.
Electric Valve Mfg.
Electrimatic Corp.
Foster Engg. Co.
Foxboro Co.
Frick Co.
Friez & Sons
General Controls Co.
Hannifin Mfg. Co.
Hunt & Son
Illinois Eng. Co.
Jenkins Bros.
Kiely & Mueller
Klipfel Mfg. Co.
Leslie Co.
Magnatrol Valve Corp.
Manning, Maxwell & Moore
Mason-Neilan Regulator
McAlear Mfg. Co.
McCorkle Co.
McDonnell & Miller
Merco Nordstrom Valve
Minneapolis-Honeywell
Northern Equipment Co.
Payne Furnace & Supply
Penn Electric Switch
Perfex Corp.
Refrigerating Spec. Co.
Ruggles-Klingemann
Schade Valve Mfg. Co.
Shafteross Mfg. Co.
Spence Engineering Co.
Supreme Elec. Prods.
Tagliabue Mfg. Co.
White-Rodgers Elec. Co.

VALVES, Hydraulically Operated
Arca Regulators, Inc.
Askania Regulator
Atlas Valve Co.
Auto. Temp. Control
Bailey Meter
Barber-Coleman Co.
Cash Co.
Controls, Inc.
Defender Automatic Reg.
Fisher Governor
Foster Engg. Co.
Gen. Electric Co.
Hays Corp.
Hydraulic Controls, Inc.
Jenkins Bros.
Kiely & Mueller
Leslie Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Merco Nordstrom Valve
Powers Regulator Co.
Republic Flow Meter
Ruggles-Klingemann
Schade Valve Mfg. Co.
Spence Engineering Co.
Sterling Eng. Co.

VALVES, Lubricated Plug Merco Nordstrom Valve

VALVES, Motor Operated (See Valves, Diaphragm; Valves, Electrically-operated; Valves, Hydraulically - operated; Valves, Solenoid)

VALVES, Pressure Relief, Reducing, etc.
Abercrombie Pump Co.
American Meter Co.
Ashton Valve Co.
Atlas Valve Co.
Bailey Meter Co.
Bastian-Blessing Co.
Belfield Co.
Boylston Co.
Brown Instr. Co.
Cash Co.
Cochrane Corp.
Connelly Iron Sponge
Crosby Steam Gage Co.
Davis Reg. Co.
D'Este Co.
Fisher Governor Co.
Foster Engg. Co.
Foxboro Co.
Fulton Sylphon Co.
Hagan Corp.
Hanlon-Waters, Inc.
Hoke, Inc.
Illinois Eng. Co.
Kenyon Instrument Co.
Kiely & Mueller
Klipfel Mfg. Co.
Lammert & Mann Co.
Leslie Co.
Manning, Maxwell & Moore
Marsh Corp., Jas. P.
Mason-Neilan Regulator
McAlear Mfg. Co.
Minneapolis-Honeywell
Natural Gas Equipment
Northern Equipment
Powers Regulator Co.
Republic Flow Meters
Ruggles-Klingemann
Schade Valve Mfg. Co.
Seely Instrument Co.
Spence Engineering Co.
Spencer Thermostat Co.
Star Brass Mfg. Co.
Tagliabue Mfg. Co.
Taylor Instr. Cos.
Vapor Recovery Systems
Vaughn-G. E. Witt Co.
Victor Equipment Co.
Watts Regulator Co.
Wilgus Manufacturing

VALVES, Proportional Air-Gas
American Meter Co.
Bristol Co.
Brown Inst. Co.
Cash Co.
Connelly Iron Sponge
Fisher Governor Co.
Hanlon-Waters, Inc.
Lammert & Mann Co.
Mason-Neilan Regulator
McAlear Mfg. Co.
Tagliabue Mfg. Co.

VALVES, Regulating
Am. Gas Furnace Co.
American Meter Co.
Arco Regulators, Inc.
Atlas Valve Co.
Automatic Valve Control
Bailey Meter Co.
Barber Coleman
Bastian-Blessing Co.
Belfield Co.
Boylston Co.
Boiler Room Equipment
Bristol Co.
Brown Inst. Co.
Cash Co.
Cochrane Corp.
Connelly Iron Sponge
Davis Reg. Co.
Defender Automat'c Reg.
D'Este Co.
Electromatic Corp.
Fisher Governor Co.
Ford Reg. Valve Co.
Foster Engg. Co.
Foxboro Co.
Friez & Sons
Fulton Sylphon Co.
General Controls Co.
Hagan Corp.
Hanlon-Waters, Inc.
Hannifin Mfg. Co.
Illinois Eng. Co.
Jenkins Bros.
Kiely & Mueller
Klipfel Mfg. Co.
Lammert & Mann Co.
Leslie Co.
Manning, Maxwell & Moore
Mason-Neilan Regulator
McAlear Mfg. Co.
Merco Nordstrom Valve
Minneapolis-Honeywell
National Airoil Burner
Natural Gas Equipment
Northern Equipment Co.
Partlow Co.
Parr Inst. Co.
Powers Regulator Co.
Republic Flow Meters
Robertshaw Thermostat
Ruggles-Klingemann
Schade Valve Mfg. Co.
Spence Engineering Co.
Tagliabue Mfg. Co.
Taylor Inst. Cos.
Vaughn-G. E. Witt
Victor Equipment Co.
Wilgus Manufacturing

VALVES, Safety Fuel Shut-off
American Meter Co.
Askania Regulator Co.
Atlas Valve Co.
Automatic Products Co.
Automatic Switch Co.
Bristol Co.
Brown Inst. Co.
Cash Co.
Davis Reg. Co.
D'Este Co.
Eclipse Fuel Engg. Co.
Fisher Governor
Friez & Sons
Fulton Sylphon Co.
General Combustion Corp.
General Controls Co.
Hanlon-Waters, Inc.
Manning, Maxwell & Moore
Mason-Neilan Regulator
McAlear Mfg. Co.
McDonnell & Miller
Milwaukee Gas Specialty
Minneapolis-Honeywell
National Airoil Burner
Natural Gas Equipment
Partlow Corp.
Payne Furnace & Supply
Penn Electric Switch
Preferred Utilities Mfg.
Ruggles-Klingemann
Spence Engineering Co.
Spencer Thermostat Co.
Tagliabue Mfg. Co.
Viking Instrument Co.
Wilgus Manufacturing

VALVES, Solenoid
Atkins & Co.
Atlas Valve Co.
Automatic Products Co.
Automatic Switch Co.
Barber-Coleman Co.
Brown Inst. Co.
Cutler-Hammer, Inc.
Davis Reg. Co.
Electric Valve Mfg. Co.
Electrimatic Corp.
Foxboro Co.
Frick Co.
Friez & Sons
General Controls Co.
Gen. Elec. Co.
General Sales & Prod.
Guardian Elec. Mfg.
Hannifin Mfg. Co.
Hays Corp.
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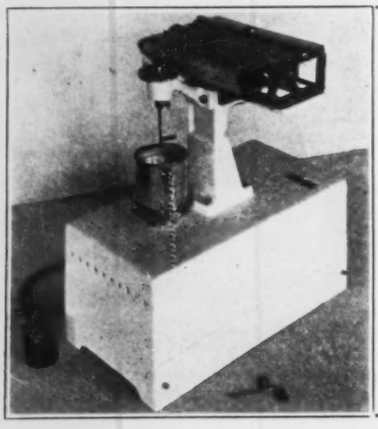

For all materials from those slightly more viscous than water to heavy paint pigments

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NEW and fills a need long felt in several industries where materials must be tested with the addition of thinners, plasticizers, etc.—wherever it is desired to obtain graphic chart records of viscosity.

Some models being under development, we solicit statements of your specific requirements

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Industrial measuring and control apparatus. Physical testing laboratories for plastic and viscous materials

Rochelle Park, N. J.

For addresses, see pages 82-91

VALVES, Solenoid (Cont'd)
Hunt & Co.
Leslie Co.
Magnatrol Valve Corp.
McDonnell & Miller
Minneapolis-Honeywell
Northern Equip. Co.
Partlow Corp.
Penn Electric Switch
Perfex Corp.
Refrigerating Spec. Co.
Ruggles-Klingemann
Schade Valve Mfg. Co.
Spence Engineering Co.
Sterling Eng. Co.
Supreme Elec. Prods.
Tagliabue Mfg. Co.

VALVES, Thermostat (See Thermostats)

VEHICLE TRAVEL RECORDERS
Commercial Engg. Labs.
Cramer & Co.
Elec. Tachometer Corp.
Kropf, Paul
Ohmer Register Co.
Pittsburgh Taximeter Co.
Service Recorder Co.

VENTURI METERS (See Flowmeters, Venturi)

VENTURI TUBES (See Flowmeters, Venturi)

VIBRATION PICKUPS
Amperite Co.
Brush Development Co.
Electrical Research Prod.
Heiland Research
Miller Corp., Wm.

VIBROGRAPHS
American Askania Corp.
Baldwin-Southwark Corp.
Cambridge Inst. Co.
Central Scientific Co.
Chicago Apparatus Co.
Commercial Engg. Labs.
Heiland Research
Impact Register Co.
RCA Manufacturing Co.
Ruska & Co.
Waugh Laboratories

VIBROMETERS
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American Inst. Co.
Ballantine Labs.
Electrical Research Prod.
Electrocon Corp.
Hathaway Instrument
Heiland Research
Miller Corp., Wm.
Potter Co.
Suter, Alfred
Televiso Co.

VIBROSCOPES
Amperite Corp.
Commercial Engg. Labs.
Heiland Research Corp.

VICAT NEEDLES (See (See Needles, Vicat)

VISCOSIMETER BATHS, Constant-temperature
Brabender Corp.
Central Scientific Co.
Fish-Schurman Corp.
Fisher Scientific Co.
Precision Scientific Co.
Ruska & Co., Inc.
Sargent & Co., E. H.
Scientific Glass App.
Tagliabue Mfg. Co., C. J.
Thomas Co., Arthur H.

VISCOSIMETERS, Brookfield
Brookfield Eng. Labs.

VISCOSIMETERS, Engler
American Inst. Co.
Boekel & Co.
Central Scientific Co.
Humboldt Mfg. Co.
Precision Scientific Co.
Ruehfel Co.

VISCOSIMETERS, Fenske
American Inst. Co.
Tagliabue Mfg. Co.

VISCOSIMETERS Ford (For Paint)
Central Scientific Co.
Eimer & Amend
Scientific Inst. Co.

VISCOSIMETERS, Hoeppler
Central Scientific Co.
Fish-Schurman Co.
Sargent & Co.

VISCOSIMETERS, Kinematic
Braun Corp.
Eimer & Amend
Tagliabue Mfg. Co.

VISCOSIMETERS, MacMichael
Eimer & Amend

VISCOSIMETERS, Recording
Brabender Corp.
Esterline-Angus Co.

VISCOSIMETERS, Redwood
American Inst. Co.
Ruehfel Co.

VISCOSIMETERS, Saybolt
American Inst. Co.
Boekel & Co.
Central Scientific Co.
Corning Glass Works
Humboldt Mfg. Co.
Kimble Glass Co.
Precision Scientific Co.
Ruehfel Co.
Tagliabue Mfg. Co.
Visco-Meter Corp.
Zuhr, Inc., Henry

VISCOSIMETERS, Scott
Boekel & Co.
Central Scientific Co.
Precision Scientific Co.
Ruehfel Co.
Sargent & Co.

VISCOSIMETERS, Stormer
Central Scientific Co.
Industro-Scientific Co.
Thomas Co., Arthur H.

VISCOSIMETERS, Ubbelohde
American Inst. Co.
Central Scientific Co.
Fish-Schurman Co.
Sargent & Co.
Tagliabue Mfg. Co.

VISCOSIMETERS, Zahn
General Elec. Co.

VISCOSITY REGULATORS (See Controllers, Automatic, Viscosity)

VISCOSITY TUBES
Cargille, R. P.
Fischer & Porter
Fish-Schurman

VOLTAGE ADJUSTERS, AUTOMATIC
Amplifier Co.
General Elec. Co.
Ideal Commutator Dresser
Sola Electric Co.
United Transformer Corp.

VOLTAGE DETECTORS (See Detectors, Voltage)

VOLTAGE DIVIDERS, Radio Frequency (See Dividers, Voltage)

VOLTAGE, HIGH (above 2300 volts) **Indicators**
General Elec. Co.
General Physical Lab.
Ideal Commutator Dresser
Rawson Electrical Inst.
Roller-Smith Co.
Sensitive Research Inst.
Shallcross Mfg. Co.
Triplett Electrical Inst.
Weston Elec. Inst. Corp.

VOLTAGE, HIGH (above 2300 volts) **Measuring Devices**
Associated Research
General Elec. Co.
International Resistance
Roller-Smith Co.
Sensitive Research Inst.
Shallcross Mfg.
Westinghouse Elec. & Mfg.
Westinghouse X-Ray Co.
Weston Elec. Inst. Corp.

VOLTAGE, HIGH (above 2300 volts) **Testing Devices**
American Transformer
Associated Research
(Cont'd)

VOLTAGE, HIGH (above 2300 volts) **Testing Devices** (Cont'd)
General Elec. Co.
Ideal Commutator Dresser
International Resistance
Miller Co., Bertrand F.
Raytheon Mfg. Co.
Roller-Smith Co.
Schweitzer & Conrad
States Co.
Superior Elec. Co.
United Transformer Corp.
Weston Elec. Inst. Corp.

VOLTAGE REGULATORS (See Regulators, Automatic, Voltage)

VOLT-AMMETERS
Am. Elec. Sales Co.
Clough-Brengle Co.
De Jur-Amsco Corp.
Esterline-Angus Co.
General Elec. Co.
Hickok Elec. Inst. Co.
RCA Manufacturing Co.
Rawson Electrical Inst.
Reliance Instrument Co.
Roller-Smith Co.
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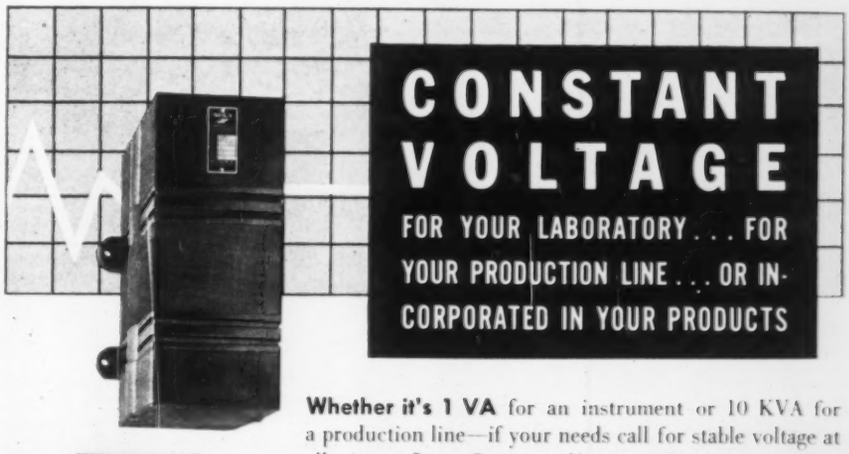

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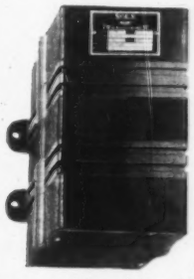

For capacities above 200 VA. Housing type.

From 20—200 VA. Primary cord set, and output receptacle.

A new unit for applications up to 15 VA. Equipped with leads or terminals.

Whether it's 1 VA for an instrument or 10 KVA for a production line—if your needs call for stable voltage at all times, SOLA CONSTANT VOLTAGE TRANSFORMERS will deliver for you.

Fully automatic, instantaneous in operation, SOLA CONSTANT VOLTAGE TRANSFORMERS have no moving parts and require no maintenance. They are self-protecting and cannot be damaged by short circuit. AND—they will maintain their output voltage to within a fraction of a percent of the specified value, even though the line voltage varies *as much as thirty percent.*

You can build a SOLA CONSTANT VOLTAGE TRANSFORMER into your product and stop worrying about your customer's line voltage. There will be no burn-outs from over-voltage, no operating failures due to under-voltage and no erratic performance resulting from line transients.

You can build a SOLA CONSTANT VOLTAGE TRANSFORMER into your production line or your laboratory and know that every test will be made under the same line conditions, that those conditions will not change from the start of your test to its finish, and, above all, that if a short circuit occurs, there will be no fires, no ruined transformer, no blown fuses.

You'll find these SOLA CONSTANT VOLTAGE TRANSFORMERS surprisingly compact—and economical, too. To augment or replace non-regulating types, standard designs are available, or units can be built to your special specification. So—whether it's 1 VA for an instrument or 10 KVA for a production line—make it a SOLA and be sure! Our engineers will assist you in selecting the type best suited to your needs. *Write for Bulletin GCV-71.*

SOLA

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S-M-O-O-T-H VOLTAGE CONTROL for A.C. circuits

The Type "TH" Transtat is the new continuously variable auto-transformer regulator . . . the ideal voltage control for a.c. circuits. It offers high efficiency, good regulation, great flexibility and dependable construction at moderate cost. Standard types are available for controlling voltage to single-phase and polyphase loads rated 10 Kva. and smaller, 50 or 60 cycles, 115, 230 or 460 volts. May we send you bulletin 51-1 which contains complete data?

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VOLTAGE REGULATORS

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178 Emmet St. Newark, N. J.

For addresses, see pages 82-91

CAMBRIDGE VOLTAMOGRAPH . . . for Polarographic Analysis

CAMBRIDGE VOLTAMOGRAPH enables rapid chemical analysis of solutions by an electro-chemical method. With it, most metals and many acid radicals and organic substances can be determined both qualitatively and quantitatively. Simple to operate, it requires only a small sample for test. At a specific voltage, increase in current indicates the presence of a specific ion and concentration of the ion is determined by the range of this increase. Although ruggedly built for industrial use, its utility for research has not been sacrificed.

For use in METALLURGY, PHYSICAL CHEMISTRY, COLLOID SCIENCE, BIOLOGY, PHARMACOLOGY, MEDICINE, and in most all the PROCESS INDUSTRIES.

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(Cont'd)
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Supreme Instruments
Sterns Electric Meters Co.
Triplett Electrical Inst.
Welch Mfg. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.

VOLT-AMPERE-HOUR METERS
Ferranti Electric, Inc.
General Electric Co.

VOLTMETERS, Contact Making
Burton-Rogers Co.
Electronic Laboratory
Electric Tachometer Corp.
Engineering Labs., Inc.
Esterline-Angus Co.
Ferranti Electric, Inc.
General Electric Co.
Geophysical Instrument Co.
Hickok Electrical Inst.
Reliance Instrument Co.
Roller-Smith Co.
Weston Electrical Inst.

VOLTMETERS, Electrostatic
Cambridge Inst. Co.
Ferranti Electric, Inc.
General Elec. Co.
Hathaway Inst. Co.
Rawson Electrical Inst.

VOLTMETERS, Indicating
Ballantine Labs.
Burton-Rogers Co.
Clough-Brengle Co.
Columbia Elec. Mfg.
(Cont'd)

VOLTMETERS, Indicating
(Cont'd)
De Jur-Amsco Corp.
Ferranti Electric, Inc.
General Elec. Co.
Hickok Elec. Inst. Co.
Niagara Electrical Inst.
Norton Electrical Inst.
Precision Apparatus Corp.
Radio City Products Co.
Rawson Electrical Inst.
RCA Manufacturing Co.
Roller-Smith Co.
Sensitive Research Inst.
Simpson Elec. Co.
Triumph Mfg. Co.
Welch Mfg. Co.
Westinghouse Elec. & Mfg.
Weston Elec. Inst. Corp.
Winslow Co.

VOLTMETERS, Megohm
Associated Research
Jackson Electrical Inst.
Rawson Electrical Inst.
RCA Manufacturing Co.
Sensitive Research Inst.
Shallcross Mfg. Co.
Sicht Co., Inc.
Televiso Co.
Welch Mfg. Co.
Weston Elec. Inst. Corp.

VOLTMETERS, Micro
Cambridge Inst. Co.
De Jur-Amsco Corp.
Hickok Elec. Inst. Co.
Microvolts, Inc.
Rawson Electrical Inst.
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General Radio Co.
Measurements Corp.

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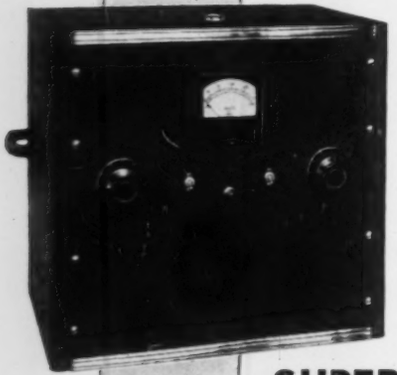

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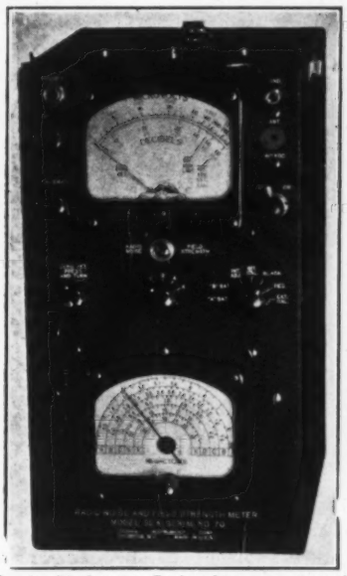

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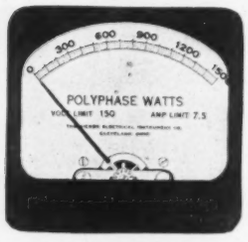

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BOOKS

OF INTEREST TO INSTRUMENT MEN

Applications of Chemical Engineering. Edited by HARRY MCCORMACK. D. Van Nostrand Co., Inc., New York, 1940. Cloth, 6 × 9¼ inches, x + 431 pages. Price $3.75.

For several years it has been known to an increasingly wide circle that (1) the twenty or thirty outstanding instrument engineers in this country who do not hold the degree of Chemical Engineer could qualify as chemical engineers by reason of their years of work with and for the chemical industries: (2) the modern chemical engineer has to be acquainted with at least the fundamentals of Instrumentation.

It is with satisfaction, therefore, that we hail the appearance of a chemical engineering book in which measurement-and-control subjects are properly emphasized. In all probability this emphasis was not deliberate in the sense of having been planned from the start. This book had its inception at the American Institute of Chemical Engineers conference on chemical engineering education in 1929 and 1935, and more particularly at the 1936 meeting of the S.P.E.E. whose Division of Chemical Engineering then appointed an editorial board and a committee on chemical engineering laboratory instructions. No doubt, when these professors of chemical engineering put their heads together they did not even have to discuss the inclusion of measurement and control subjects: they took for granted the importance of these subjects. The result is that the first two chapters are:—

Measurement of Temperature by R. A. Ragatz.

Flow of Fluids by J. H. Rushton.

If that is not giving the place of honor to Instrumentation, what more could one want?

Well, one might want profuse notes on measurement methods in all of the other chapters and in the seventy-two Experiments. And that is exactly what one gets!

The other chapters are as follows:

III. Flow of Heat. By Harry McCormack.

IV. Evaporation and Evaporators. By W. L. Faith and H. McCormack.

V. Distillation. By Joseph H. Koffolt and James R. Withrow.

VI. The Drying of Solids. By O. A. Hougen.

VII. Humidification and Dehumidification. By O. A. Hougen.

VIII. Gas Absorption. By J. C. Elgin and J. C. Whitwell.

IX. Filtration. By E. W. Comings.

X. Classification and Concentration of Solids. By Henry T. Ward.

XI. Size Reduction. By Lincoln T. Work.

All authors are professors of Chemical Engineering. They evidently became well acquainted with one another and evidently worked under extraordinarily competent leadership; and the evidence is the uniformity *cum* diversity which makes this volume a book rather than a heterogeneous collection.

—M. F. BEHAR

The Modern Theory of Solids. By FREDERICK SEITZ. McGraw-Hill Book Co. New York, 1940. Cloth, 6 × 9 inches, xv + 698 pages. Price $7.00.

Not many years ago, most applied scientists regarded the development of quantum mechanics as something unlikely to affect their work. Professor Seitz's book shows, however, that there are a number of technically important properties of solids where quantum theory is already now in a position to contribute to our understanding. Among them are thermal and electrical conductivity, magnetic properties and, to a certain extent, even the mechanical properties like strength and elasticity.

The book begins with the empirical classification of solids into five fundamental types: Metals, ionic crystals, valence crystals, semi-conductors, and molecular crystals. The subsequent chapters deal with the common and different properties of these types, and with the methods of their theoretical treatment. While some sections are highly mathematical, others contain many qualitative arguments and conclusions which will be of great value for engineers, chemists, or experimental physicists, who are not particularly interested in all the mathematical details and who will be greatly assisted by the 306 figures and diagrams. The book is clearly written and it can be heartily recommended.

—I. ESTERMANN, *Assoc. Professor of Physics, Carnegie Institute of Technology, Pittsburgh.*

Standard Handbook for Electrical Engineers—7th Edition. ARCHER E. KNOWLTON, Editor-in-Chief, and R. M. SHOOP, Assistant Editor. McGraw-Hill Book Co., New York, 1941. Leatherette, 6 × 9¼ inches, xii + 2303 pages. Price $8.00.

A handbook is difficult to review as no one individual can take the time to check all the data contained therein. In this case the book is the seventh edition of this well-known electrical engineers' handbook.

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—RICHARD RIMBACH

The Meteorological Glossary — Third Edition—First American Edition. By the Authority of the Meteorological Committee, Air Ministry, England. Chemical Publishing Co., Inc., New York, 1940. Cloth, 5½ × 8¾ inches, 251 pages. Price $3.

An alphabetical arrangement of all the terms and concepts met with in meteorology, explaining them. Illustrations show weather-maps of various weather conditions and the various classifications of cloud formations. A large section is devoted to the equivalents of English terms in Danish, Dutch, French, German, Italian, Norwegian, Portuguese, Spanish and Swedish.

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Industrial Instruments for Measurement and Control. By THOMAS J. RHODES. McGraw-Hill Book Co., Inc., New York, 1941. Cloth, 6 × 9 inches, ix + 573 pages. Price $6.00.

This is one of the fifteen books constituting the McGraw-Hill Chemical Engineering Series. It is a compilation from many and varied sources. As to the discrimination used by the compiler in selecting these sources, opinions will differ. Today the annual output of the instrument manufacturers' literature runs into thousands of different books, catalogs, pamphlets and leaflets. This book includes some very good selections such as those abstracted from Bureau of Standards bulletins, from Behar's books, from ASME publications, from articles in *Instruments* and from others.

At a time like this when industrial instrumentation has become more important than ever before and thousands of men are asked to acquaint themselves with the principles of the operation of these instruments for the purpose of using them efficiently and economically for controlling processes, the need of a book of this type is very great and the author and the publishers are to be commended for rushing ahead with the work and expenditure to do a lot of good, even though all through the book there are scattered errors, omissions, a lack of a uniform terminology, and faulty conceptions that will make a revision rather urgent in the near future. It is particularly important to rectify misquoted equations, errors in spelling, and statements about instruments and their functions which are misleading.

On the other hand, the present scarcity of books suitable for use as a text makes it desirable to have these corrections printed immediately in a current journal such as *Instruments*, which is undoubtedly available to most of the purchasers of this book so that these corrections could be entered in the books by the individuals who are sufficiently interested. I would, therefore, suggest that such corrections be compiled by those in a position to do so as a very practical means of serving the nation in a time of need.

—JOHN J. GREBE, *Director of Physical Research Laboratory, Dow Chemical Co., Midland, Mich.*

Principles of Magnaflux Inspection. By F. B. DOANE. Photopress, Inc., Chicago, 1940. Cloth, 5½ × 8½ inches, 133 pages. Price $2.50.

The proprietary "Magnaflux" method of detecting defects in metals has enjoyed a degree of commercial success without parallel in this field; it has been widely adopted and has contributed much to the inspecting art and to the improvement of the quality of metallic materials. Although the method is well known, it is fortunate now to have a book fully descriptive of the method written by an authority.

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This book should become a standard reference on this subject. It is well written and well printed. For this type of inspecting, it should become the inspector's bible.

—ROBERT F. MEHL, *Head of Metallurgical Dep't, Carnegie Institute of Technology, Pittsburgh.*

Statistical Mechanics. By JOSEPH E. MEYER and MARIA G. MEYER. John Wiley and Sons, Inc., New York, 1940. Cloth, 6 × 9¼ inches, xi + 495 pages. Price $5.50.

Several books on statistical mechanics, a subject neglected for many years, have appeared recently. Among them, this book fills a definite need for a fairly elementary text that treats both theory and applications in a clear and simple manner. Statistical mechanics is a field of theoretical physics, whose applications are of particular interest for chemists and physical chemists; thus a book like the present one, whose authors are a chemist and a theoretical physicist, represents this character very well. The subject is treated on a thoroughly modern basis, i.e., including the principles of quantum mechanics. While intended primarily as a textbook, it contains a number of tables of thermodynamic functions and a detailed index, which make it valuable also as a reference book.

—I. ESTERMANN, *Assoc. Professor of Physics, Carnegie Institute of Technology, Pittsburgh.*

Electrical Measurements and Measuring Instruments. Third Edition. By E. W. GOLDING. Sir Isaac Pitman & Sons, Ltd., London; Pitman Publishing Corp., New York; 1940. Cloth, 5¾ × 8¾ inches, xii + 828 pages. Price $7.50.

In the five years which intervened since the second edition came out in 1935, even since that second edition was reprinted in 1938, there have been advances in the field of electrical measurements and in the design of certain classes of instruments—particularly those used in communications laboratories. Dr. Golding has duly inserted a number of passages and has also made a few corrections. It would have been too much to expect, of course, that this work of nearly a thousand pages, which has become a classic in England, should have been re-written in its entirety or even in large part.

In point of fact, most important changes and additions have to do with "new methods of magnetic testing, of current-transformer testing, and the requirements of the Electricity Supply (Meters) Act of 1936. This last has brought about considerable changes in the methods of meter testing. Many smaller additions have also been made, and further examples, taken from recent examination papers, have been included. While it is impossible to include descriptions of all the many new instruments introduced, the most important of these have been dealt with and references to others have been added in the bibliographies at the ends of the chapters." (Quoted from the Preface to the Third Edition.)

Since "Golding" is already a familiar reference in most American electrical libraries, and since previous editions have been reviewed in *Instruments*, this is not so much a review as a "notice" for the benefit of all readers whose work lies in the field of important electrical measurements.

It may be said for the benefit of those who have never heard of this famous book, that it was primarily conceived and written as "a textbook covering the syllabuses of the B.Sc. Engineering, City and Guilds (final), and I.E.E. examinations in this subject." As usual, there are many pages of examination questions (in this edition, 22 pages) at the back of the book. As usual, most of these are helpful to Americans who are preparing for important Civil Service electrical jobs. As usual, the emphasis is on English design and construction, but the fundamental theory of any type of instrument knows no international boundaries and Dr. Golding is unexcelled in the art of teaching through the medium of words and diagrams on the printed page. The thoroughness of the treatment could be illustrated by many examples but it will suffice to mention that Chapter X on "Illumination," though only 23 pages long, is a veritable little textbook on that subject.

All of the diagrams are reproduced in adequate size, so that no reader will have to use a magnifying glass to make out the lettering, as is so often the case. On the other hand, I cannot understand the necessity for so many full-page illustrations of relatively unimportant details—in fact, not only full-page illustrations but folded inserts showing structural details or outside views of instruments and meters. Another minor flaw is the omission of the dates of the books listed in the bibliographies at the ends of the chapters.

—M. F. BEHAR

British Standard Specification for Dial Gages for Linear Measurements (Excluding Back Plunger Type). British Standards Institution, Publications Dep't, 28 Victoria St., London, 1940. Paper, 5½ × 8½ inches, 20 pages. Price 2 shillings net.

In addition to giving standard specifications for dial gages, this publication contains appendices concerning their recommended dimensions, methods for testing them; and notes on their use and care.

The specifications will interest American readers but they are somewhat unnecessary in this country because of the standardization which has taken place in these instruments by the reliable companies during the past ten years. One interesting specification is a group of five tables included in the main specification which define the permissible errors in a dial indicator. It is interesting to note that a dial indicator having 50 divisions on its face of 0.001" each (an indicator which would fit the specifications of 75% of the dial indicators in any machine shop) may be in error a quarter of a thousandth in five thousandths.

Appendix B, covering notes on methods of testing dial gages, is not only complete but is extremely clear in its presentation both as to method and interpretation of results obtained. It shows the procedure followed in establishing a calibration curve of a dial gage over its entire range.

The most important feature of the publication is its indirect appeal for use of the dial indicator as a comparator and not as a measuring instrument. The calibration curve shown in Appendix B is an excellent argument for using a dial indicator only over short range and for comparison and not measurement.

—RUSH A. BOWMAN, *First Lieut., O.D., U.S.A., Assistant in Charge of Gage Laboratory, Pittsburgh Ordnance District.*

Reports on Progress in Physics, Volume VII (1940). Edited by J. H. AWBERY. The Physical Society, London, SW7, England, 1941. Cloth, 7¼ × 10 inches, 362 pages. Price $4.75.

"No physical research laboratory is completely equipped if it lacks this volume and its precursors" is the assertion which this reviewer has made at the end of his reviews of Vols. III, IV, V and VI of these annual *Reports*. I purposely put this sentence at the start of my review this year, because it is no longer an assertion of opinion but a statement of fact.

For the first time, there is no Preface. Reasons for this omission are not disclosed in the terse one-sheet Publisher's announcement that came with this volume. One reason may be that the usefulness and quality of these *Reports* have won such wide recognition that there no longer is any need for any persuasion or even for any explanation.

And yet a brief Preface could have been written if only to call attention to one new feature which will no doubt be overlooked

by other American reviewers. This new feature consists in printing between parentheses the year of publication of every book, paper or other disclosure to which reference is made in the text. Thus, instead of the nearly-universal custom of citing in this way—

"It had been shown by Jones[25] and by Smith[53] . . ."

the new style is like this—

"It had been shown by Jones (1933) and by Smith (1939) . . ."

and of course the bibliographies at the ends of articles, or of sections of articles, are arranged alphabetically by authors and chronologically for each author. Some bibliographies, moreover, are classified by subjects. Being an editor myself, I could write a long review about this and other evidences of the Editor's painstaking (and successful) efforts to make the whole book easy to use as a reference as well as delightful to read.

Another thing a Preface could have pointed out is that the Editor, and The Physical Society back of him, overcame war-time difficulties to carry out their plans. For example the article on "Photoelectric spectrophotometry and its use in industry" was to have been written by Professor A. C. Hardy of M.I.T. but he could not do it in the time left after he received the Society's invitation, so Dr. W. D. Wright of Imperial S.&T. came up as pinch-hitter and made a home run. (In cricket lingo, "went to the wicket as substitute batsman and scored a century.")

Most of the other articles, of course, do not show signs of having been written under pressure. On the contrary, they are polished gems. The authors, of course, are predominantly British but the reader will recognize one Ohio State and two M.I.T. names in the list of articles which follows:

Sound. By E. G. Richardson.

Musical acoustics. By E. G. Richardson.

Photoelectric spectrophotometry and its use in industry. By W. D. Wright.

The infra-red spectra of polyatomic molecules. By Harald H. Nielsen.

The gamma radiations emitted in nuclear processes. By N. Feather.

The Bohr theory of nuclear reactions. By R. Peierls.

Electron microscopes of high magnifications. By O. Klemperer.

New lens systems. By H. W. Lee.

The absorption of light in interstellar space. By A. Hunter.

Solar physics. By A. D. Thackeray.

Surface tension. By R. C. Brown.

Equations of state. By James A. Beattie and Walter H. Stockmayer.

Electrical discharges in gases and their applications: Part I. By V. J. Francis and H. G. Jenkins.

Some interactions of gases with metals and crystalline solids. By J. K. Roberts.

Viscosity and the nature of substances of high molecular weight in solution. By F. Eirich.

The development of the teaching of experimental physics in British universities. By Allan Ferguson.

At the time of writing this review (Aug. '41) it is learned that only Vols. I, II and IV are out of print. When you order this one, send for III, V and VI . . . and order VIII in advance! The North Atlantic must and will remain an open lane for the interchange of good books like this between the two halves of our common Civilization.

—M. F. Behar

The Electron Microscope (Elektronen-Übermikroskopie). By Manfred von Ardenne. Julius Springer, Berlin, 1940. Paper, 6¾ × 10 inches, 393 pages. Price 54 RM.

This new instrument, the electron microscope, has attracted a great deal of interest in the last few years. It has afforded a new degree of resolution in microscopy, yielding magnifications which at 100,000 diameters are equally good in resolution as those made with the ordinary microscope at 2500 diameters, and permitting the observer to separate distances in the neighborhood of 20 to 50 atom diameters. This new microscope has already opened new fields of research, especially in medicine and bacteriology, and has recently been successfully applied in metallography; its early development was chiefly German, while the American development was made by Dr. Zworykin and his associates at R.C.A. This latter microscope is now on the market and is being widely applied.

The present volume, written by a German authority, is the most complete treatment of the subject the reviewer has seen. It is well-balanced between theory and application. Twenty-seven pages are devoted to the physical basis, six to the theory of the electron microscope, 105 to its construction, and 190 to its operation, including a section on stereoscopy. Numerous excellent electron-microscope photomicrographs are included. The book is well printed, and the diagrams good. This is a book to be unhesitatingly recommended to workers in this field, whether they be interested primarily in the physics of the electron microscope or in its applications.

—Robert F. Mehl, *Head of Metallurgical Dep't, Carnegie Institute of Technology, Pittsburgh.*

Exploration Geophysics. By J. J. Jakosky. Times Mirror Press, Los Angeles, Calif., 1940. Cloth, 6¼ × 9¼ inches, xii + 786 pages. Price $8.

As its name implies, geophysics combines the sciences of physics and geology by employing physical principles for the solution of geological problems. While its most extensive application has been in the search for oil or oil-burning structures in sub-surface rock strata, it has been widely used in mining exploration for metallic minerals and to a minor extent in various other branches of engineering.

Until recently no book on applied geophysics has been available which could, in any sense, be considered comprehensive, although a great deal of literature consisting of individual papers on specialized topics has been published. During the past year this deficiency has been remedied by the almost simultaneous appearance of three new books, one of which is Dr. Jakosky's. The author is well qualified by experience during the period of development of geophysics, as well as by numerous contributions thereto, to write such a treatise. The book covers the entire field of geophysical prospecting for oil and other minerals as well as applications in engineering.

The first two chapters are introductory in nature, giving a brief history of the development of the chief geophysical methods, a discussion of their economic and geologic importance, and an appraisal of their relative usefulness in the fields of exploration in which they are individually applicable. The ensuing chapters are devoted to detailed expositions of the various techniques and procedures used in practice.

The third and fourth chapters deal with the magnetic and gravitational methods which involve surface measurements of variations in the natural magnetic and gravitational fields of the earth with the object of locating anomalous variations in these fields which are diagnostic for the underlying geologic anomalies being sought. Descriptions of the numerous types of instruments, the principles of their operation, and the field procedures by which they are employed, are given. The technique of interpreting the data (deriving the location and nature of the buried features) is also described.

Electrical methods of prospecting are included in the next two chapters. Artificial electromagnetic fields are applied to the region under investigation either by direct application of electric current to the ground or induction therein of an electromagnetic field. If buried ore bodies, water sands, prominent structural relief in certain rock strata, etc., are present they give rise to anomalies in the resultant electromagnetic field which may be detected by sensitive measuring instruments located on the surface. Techniques for interpreting the data are presented. This is the particular type of exploration to which the author has contributed most and is, consequently, the one treated most completely. Electrical methods have found their widest application in the location of metallic ores.

There follows a chapter on seismic methods (used chiefly in prospecting for oil bearing sub-surface rock structures). Sound waves generated at the surface of the ground by means of an explosive charge are reflected and refracted at the interfaces separating strata of different physical characteristics. The data obtained by sensitive portable seismometers permit the calculation of the depth and attitude of the beds from which the recorded impulses were reflected or refracted. In this manner sub-surface strata to depths of 15,000 feet or more can oftentimes be mapped. This chapter is especially noteworthy because of the excellent treatment of methods used in the mapping of beds with steep dips.

A short chapter on geochemical methods involving the chemical analysis of soil samples taken from near the surface as well as rock samples from deep bore holes covers this relatively new technique in a general way. Geothermal methods which make use of temperature measurements and heat flow in the earth are treated in a similar manner.

Two chapters are devoted to the explanation of practically every conceivable method of making physical measurements or taking rock samples in deep drilled wells for the purpose of obtaining information of prospecting value or pertaining to the production of oil in the well.

A final chapter presents practical and legal aspects of permit, trespass and insurance practices relative especially to the personnel and mobile equipment of the field parties conducting geophysical operations.

This book is remarkably complete in embracing every accepted method of geophysical prospecting. Particular emphasis has been placed on field procedures, many useful formulae are derived, and numerous examples of actual survey data are presented. A liberal bibliography of published papers is included in the text, and at the end of each chapter is appended what appears to be a complete list of United States and foreign patents. These tabulated patent references constitute a unique feature of this book. Of especial interest to readers of *Instruments* is the lucid manner in which the large variety of instruments and their principles of operation are described.

However, the fundamental physical principles underlying the various methods have been passed over rather cursorily so that an inquisitive student studying geophysics for the first time would hardly acquire a thorough insight into the theories involved without considerable outside study. Though the contents are highly technical they are not essentially mathematical. Nevertheless, occasional flights are conducted into the realm of high-powered mathematics and physics, as for instance in the treatment of the theory of the torsion balance used in gravity prospecting, and the theory of seismometers used in seismic prospecting. These expositions will go over the heads of those who are not well versed in mathematics and physics, and they appear somewhat incongruous in relation to the rest of the book. In a few instances the order of presentation of related topics is somewhat arbitrary. As a consequence the book is rendered less suitable as a text-book.

Nevertheless, in spite of these minor criticisms, the book is exceptionally well written and readable, and because of the completeness with which it covers the field, it is highly recommended as a reference work. As such, it should be invaluable to anyone interested in geophysics whether his position be administrative, practicing geophysicist, or student.

—C. A. Swartz, *Geophysical Staff, Gulf Research & Development Co., Harmarville, Pa.*

Handbook of English in Engineering Usage — 2nd Edition. By A. C. HOWELL. John Wiley & Sons, Inc., New York, 1940. Cloth, 5 × 7½ inches, ix + 133 pages. Price $2.50.

"It is an affectation and unidiomatic to say *an hotel, an utility company, an historian.*" —From the section on Idiom.

"Wrong	"Right
He compared electricity with water.	He compared electricity to water.
He compared steel to cast iron."	He compared steel with cast iron."

—From the same section on Idiom which, though only four pages long, contains forty-seven other examples as well as eight explanatory paragraphs.

Parallel columns are not always headed "Wrong" and "Right"; the reader will find such refreshing variants as "Childish" and "Better."

This brief sampling conveys a clearer idea of this book's character and usefulness than would the usual pedantic review of the usual correct-English reference work. The author is Professor of English in the University of North Carolina—a garden where several flowers of true American culture have recently blossomed because their roots are watered with the elixir of Liberalism. He has produced a guide worth many times its cost to any engineer who wishes to advance more rapidly than the "average" engineer.

In its arrangement and essentials, this guide is well-nigh perfect. It begins with a chapter on the Characteristics of Engineering Writing; then leads the student through The Word, The Sentence and The Paragraph to The Whole Composition. Then—and then only—after these rich chapters, does the author take up somewhat more arid specific subjects:

VI. Punctuation and Mechanics
VII. Grammar
VIII. The Business Letter
IX. Reports
X. Technical Magazine Articles.

It is unlikely that anyone who for decades has earned a part of his income by editing and technical writing will agree with all of Dr. Howell's rules and precepts. One little thing that irks me is Dr. Howell's frequent harping on impersonality, which (to quote Sir William Gilbert) "amounts to a disease." But this criticism applies only to the rules and assertions in his text-matter—not to his choice of examples. One of these examples, a book review (written by Dr. George A. Stetson, Editor of *Mechanical Engineering*, though printed with only the initials "G.A.S.,") is far from being impersonal: it even contains such expressions as "one might wish" and "one wonders." For that matter, THE example of examples—the letter from C. F. Kettering to Dr. Howell which is reproduced in facsimile as the frontispiece—opens with:

"In answer [etc.] I should like to make a few remarks regarding the importance of English . . ."

which Dr. Howell himself no doubt considers better than:

"In answer [etc.] a few remarks . . . are submitted."

By the way, I often get in my mail letters with just that style of impersonal opening paragraph, mostly from engineers — engineers who perhaps go to great pains to avoid using the perpendicular pronoun when writing to a veteran editor. Some of them—thank goodness—relax as they go on dictating or writing. Which is all to the good! The book under review is a second edition (*Instruments* did not get a review copy of the first edition in 1930) and I for one wish that the third edition will not teach that engineering English must be so darn austerely impersonal.

Since most readers of this review read newspapers which run daily "Correct English" columns, I have to point out that there is no comparison between Dr. Howell's sound rules and the outmoded rules laid down in these cheap, priggish, often-stupid columns. Dr. Howell recognizes that the English language is continually evolving; the hacks who grind out most of the newspaper "Good English" columns seem to use Victorian-era texts as their sources.

It is impossible, of course, for any man to sense all changes; it is difficult to perceive most of them; it is particularly difficult for a professor whose advantageous closeness to the student body constitutes also the double handicap of hearing only one student body and of being out of touch with other *milieus* where tomorrow's English is being spawned today. In the List of Words Frequently Misused, I find (page 51): "Line. Business vulgarism for *kind of business* or *material*. To be avoided." This was true when "line" meant what is commonly (and vulgarly) called "the complete line." But the relative paucity of collective nouns and the need of avoiding the use of *class, type*, etc., which had acquired specific meanings, gradually endowed *line* with respectability. Since the nineteen-twenties it has been correct to say or to write, for example, "The XYZ Company has added a series of three portable models to its line of recording wattmeters."

In the same list there are two or three other injunctions which are losing their validity but which should be heeded in writing formal technical reports.

But this List of Words Frequently Misused is five pages long; and it alone is worth the price of the book.

—M. F. BEHAR

Fluorescent Light and Its Applications. By H. C. DAKE and JACK DE MENT. Chemical Publishing Co., Inc., Brooklyn, N. Y., 1941. Cloth, 6 × 9¼ inches, xiii + 256 pages. Price $3.00.

To an engineer, this book is extremely interesting. In fact, some portions are fascinating. But it is a reviewers' duty to explain that the attractiveness arises from novelty rather than from practical utility. The authors are respectively Editor and Associate-editor of *The Mineralogist Magazine*. Mr. Dake is the honorary president of the Northwest Federation of Mineral Societies and Mr. DeMent is the research director of the Mineralogist Laboratory. Therefore, their viewpoint is not exactly that of an engineer working in an industrial plant.

Having scrupulously explained this for the benefit of industrial readers who might expect a profusion of application diagrams, tables of exposure for various food-industry or other processing applications, etc., I must add that every worker who makes use of fluorescent light or who expects to do so will find a wealth of fundamental information in this book.

For one thing, the authors have appended a twenty-page bibliography classified under the following headings: Early Work, Radiation, Types of Luminescence, Theory of Luminescence, Activators, Examination Procedure and Technique, Sources, Specific Minerals, Radioactive Minerals, Gems, Collections, General Uses and Applications.

This last heading takes up five pages and is itself divided into the following sub-heads: Microchemistry, Pharmaceuticals, Chemistry, Foods and Food Products, Criminology, Sterilization, Textiles and Dye-stuffs, Medicine and Biology, Petroleum.

The book is divided into eleven chapters, the titles of which correspond closely to those of the extensive bibliography listed above. It concludes with an author index and a subject index.

—It is unfortunate that poor proofreading (or some other reason) resulted in awkward typographic and other errors, particularly in the passages which deal with physics rather than with mineralogy. For example on page 12 the table is all mixed up and the attribution of the definition of wavelength to one particular worker is nonsense. But one must not be too critical with a first book—particularly with such an otherwise first-class job.

—M. F. BEHAR

Meteorological Instruments. By W. E. KNOWLES MIDDLETON. University of Toronto Press, Toronto, Canada, 1941. Cloth, 7 × 10 inches, viii + 213 pages. Price $3.25.

This book fills a real need for a treatise on meteorological instruments in English although purposely not as exhaustive in character as Kleinschmidt's handbook (*Instruments*, Vol. 9, 1936, page 188). On the whole it is a comprehensive and well-balanced survey of present-day meteorological instruments with Canadian meteorological instruments naturally featured in view of the author's affiliation with the Canadian Meteorological Service. When there is a choice there is a tie-in with British rather than United States nomenclature and practice which is a little unexpected in spots. The reviewer must hasten to say that developments in this country have not been neglected but the emphasis is secondary in most instances.

The book opens with an introductory chapter which is refreshing in style and in which the author discusses the properties common to meteorological instruments and outlines primary requirements from both the viewpoint of the designer and the user. The other chapters in order are on the measurement of atmospheric pressure (36 pages), temperature (33 pages), humidity (16 pages), precipitation and evaporation (14 pages), wind (38 pages), instruments for investigating clouds (8 pages), sunshine recorders (6 pages) and instruments for investigation of the upper air (20 pages). There is an index. Adequate references are given to original sources and more complete treatments.

The separation of topics in the chapters by well-placed subheads has been done so well as to deserve special commendation. The nomenclature for a number of instruments is novel and in some cases is to be regretted. The print and paper are excellent; the 160 photographs are well selected and leave little to be desired as to clarity and caption.

The reviewer was surprised at his own ignorance of the curious fact that the Canadians and the British use 980.62 cm/sec² as the standard for the acceleration of gravity (page 12); the international value adopted in 1901, is 980.665 cm/sec². The out-of-step value is given as "the standard for mean-sea level at 45 degrees latitude" which is true, but the international standard is not tied up with a latitude in its definition. The difference is 1:25000, not significant except in precise measurements of pressure in a research laboratory.

A minor oversight (page 28) is the failure to give the value of the cubical coefficient of expansion of mercury as part of the discussion of the temperature errors of mercury barometers. Further, attention should be called to the fact not clearly brought out, that for the Kew barometer the temperature correction (equation 2.22) and gravity correction (equation 2.27) cannot be combined as a product simply of the reading plus a constant and the barometer temperature plus the "fiducial" temperature. Therefore it is of doubtful practical value to do other than consider the gravity correction separately for which convenient tables are available. Otherwise the treatment of the corrections to be applied to barometer is excellent.

The error in Fortin type barometers with small diameter cisterns arising from changes in the meniscus in the cistern as the surface fouls is not touched upon.

While space would not permit exhaustive description of the many designs of aneroid barometers, readers would benefit by a fuller discussion, than the brief mention of the Negretti and Zambra steel diaphragm capsules, of the possibilities of the corrugated diaphragm capsule without an auxiliary spring. This type of pressure capsule of nonferrous metal has been used almost exclusively in this country in aviation altimeters since 1928; it is illustrated in figure 154, but not described. The reviewer disagrees with the statement that for aneroid

barometers "elastic errors are usually unimportant . . . faulty temperature compensation is a much more important defect" (page 45). Elastic errors are difficult to remedy and to eliminate by applying corrections; complete temperature compensation offers no primary difficulty.

An unintentional slip in the section on the correction for emergence of thermometer stem on page 63 is the definition of n which should be "n degrees of the mercury thread out of the medium" instead of "n degrees of the scale."

An occasional description of an instrument suffers because the author omitted stating some fact. For example, in describing the record obtained from the Canadian radio sonde, it is not explicity stated how temperature, pressure and humidity are determined from the chart. It can be easily deduced but its omission makes for more difficult reading. In another example a bimetal thermograph is described and it is noted that the instrument described would be improved if the bimetal were made twice as thick, but the original thickness of the bimetal is not given.

The book contains a wealth of information on meteorological instruments written largely from first-hand experience.

It is an essential document for both meteorologists and meteorological instrument engineers and much can be gleaned also by instrument engineers in other fields. The author's presentation and choice of material is such that reading the book is equivalent to a long visit which might be made to learn about the instrument technique and experience of the Canadian meteorological service. Such a visit would reveal that most of the practices and instruments are similar to those used in this country, of those different, some are better, and some not as good, as our own; and so it is when reading the book.

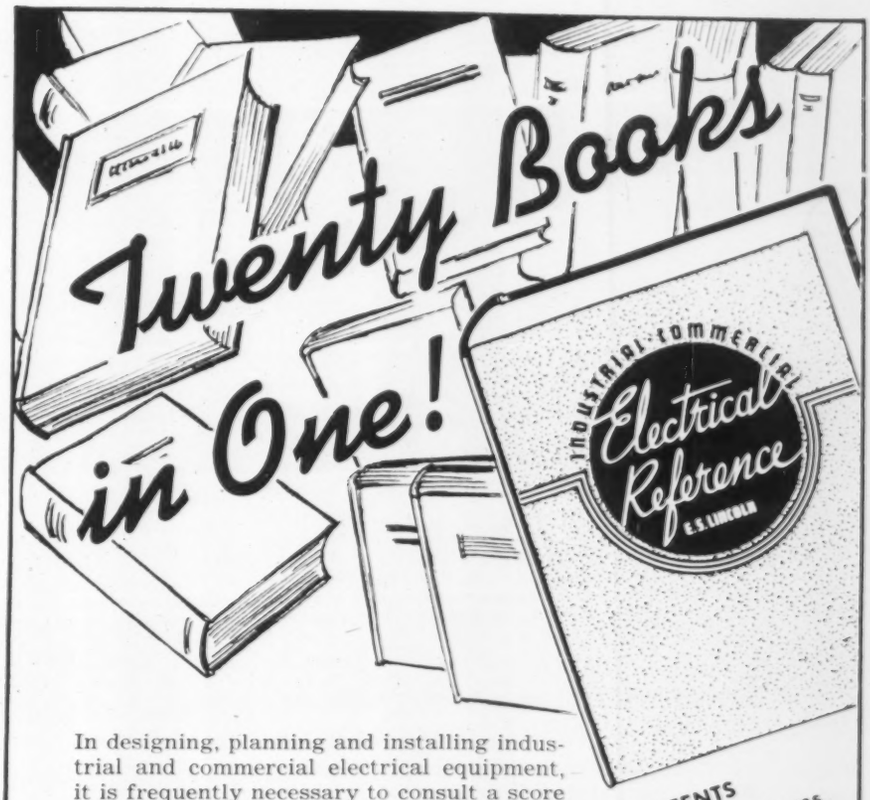
—W. G. Brombacher, *Chief, Aeronautic Instruments Sec., National Bureau of Standards, Washington.*

Electron Optics—Theoretical and Practical. By L. M. Myers. D. Van Nostrand Co., Inc., New York, 1939. Cloth, 5¾ × 9 inches; xviii + 618 pages. Price $12.

In the second line of his Preface the author calls electron optics "an almost new branch of science"; on the second page of his Preface he calls it "this branch of vacuum physics." Inasmuch as electron optics has not yet been "incorporated in the syllabus of any technical school" (excepting the Imperial College of Science and Technology) it is a new science. By the same token this is the first full-length treatise on this new science.

Although the author states that it is written primarily for the graduate student who intends taking up this new science as a career, this book should appeal even more to the present workers in all allied and affected fields, whether they are Sc.D.'s or unencumbered with academic degrees. Research and development men who have been struggling with problems even remotely related to the behavior of "free" electrons will probably find direct leads to solutions and will certainly find fundamental data (many heretofore unpublished) contributing to the rationality and chances of success of proposed approaches to problems. For example, the fifty-four page chapter on "Vacuum Technique" contains many practical suggestions and tables and diagrams covering an astonishingly wide variety of topics, from preparation of cathode surfaces to screen, material characteristics, degassing, construction of multipliers, etc. And the 133-page final chapter, entitled "Further Applications," is a rich "catch-all" which seems to be the result of a happy thought on the part of the author, to include *every* bit of useful *recent* miscellaneous information he gathered from his numerous individual and institutional collaborators. (While browsing through this final chapter the reviewer was delighted to find some data on high-temperature phenomena which

(Continued on page 91)



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Ajax Engineering Co., 1260 Winslow St., N. W., Cleveland, Ohio
Balancing machines

Akatos, Inc., 55 Van Dam St., New York, N. Y.
Optical instruments

Allen-Bradley Co., 1326 S. Second St., Milwaukee, Wis.
Electric control apparatus

Aloe Co., A. S., 1819 Olive St., St. Louis, Mo.
Laboratory supplies

Alpha Instrument Co., 2103 K St., N. W., Washington, D. C.
Meteorological instruments

Alpha-Lux Co., Inc., 192 Front St., New York, N. Y.
Moisture testers

Altender & Sons, Theo., 1219 Spring Garden St., Philadelphia, Pa.
Drawing instruments

American Askania Corp., P.O. Box 344, Houston, Texas
Scientific instruments

American Automatic Electric Sales Co. See Automatic Electric Co.

American Blower Corp., 6000 Russell St., Detroit, Mich.
Manometers

American Cystoscope Makers, Inc., 1241 Lafayette Ave., New York, N. Y.
Bore inspection devices and internal surface inspection devices

American District Steam Co., North Tonawanda, N. Y.
Steam flowmeters

American Electrical Sales Co., Inc., 65-67 West 8th St., New York, N. Y.
Vacuum thermocouples

American Gas Accumulator Co., 1029 Newark Ave., Elizabeth, N. J.
Time delay relays

American Gas Furnace Co., Lafayette, Spring & Elizabeth Sts., Elizabeth, N. J.
Furnace manufacturer, temperature controllers

American Indicator Paper Co., 4611 N. Kostner Ave., Chicago, Ill.
Chemical indicator papers

American Instrument Co., 8010-8020 Georgia Ave., Silver Spring, Md.
Scientific instruments & materials testing apparatus

American Machine & Metals, Inc.
See Riehle Testing Machine Div.

American M.A.N. Corporation, 40 Rector St., New York, N. Y.
Testing machines for tension, compression, torsion, bending, fatigue (torsional and bending), abrasion (wear). Mechanical oil testing machines. Bearing testing machines (friction, wear)

American Meter Co., 60 East 42nd St., New York, N. Y.
Tinned case & ironcase positive displacement gas & air meters, pressure reducing regulators, meter testing apparatus, indicating, recording & integrating flowmeters, rate volume & liquid level controllers & remote controllers

American Moistening Co., 260 W. Exchange St., Providence, R. I.
Psychrometers

American Paulin System, 1847 So. Flower St., Los Angeles, Calif.
Meteorological instruments

American Telescope Laboratories, Inc., 5864 Hollywood Blvd., Hollywood, Calif.
Astronomical instruments

American Temperature Indicating Co., 1017 Summit St., Toledo, Ohio
Electrical resistance thermometers

American Timer Corp., 316 Anderson Blvd., Geneva, Ill.
Portable timers

American Transformer Co., 178 Emmet St., Newark, N. J.
Transformers & electrical apparatus including voltage regulators, high voltage testing sets, rectifiers

Ames Co., B. C., Waltham, Mass.
Comparator & dial gages, length measuring devices

Amperite Corp., 561 Broadway, New York, N. Y.
Microphones

Amplifier Co. of America, 17-19 W. 20 St., New York, N. Y.

Amthor Testing Instrument Co., Inc., 48 Van Sinderen Ave., Brooklyn, N. Y.
Physical testing machines

Anderson Bros. Mfg. Co., 1910 Kishwaukee St., Rockford, Ill.
Balancing machines

Anderson Co., Gary, Indiana
Electrical remote indicators for liquid level, temperature, pressure & line voltage within automotive ranges

Andrew, Victor J., 6429 South Lavergne Ave., Chicago, Ill.
Radio antenna equipment

Annis Company, R. B., 1101 N. Delaware St., Indianapolis, Ind.
Permeameters

Ansonia Clock Co., Inc., 30 Rockefeller Plaza, New York, N. Y.
Timing devices

Applied Research Labs., 4336 San Fernando Rd., Los Angeles, Calif.
Spectrochemical testing apparatus including spectrographs, projection comparators, densitometers, & power source units for arc & spark analysis.

Area Regulators, Inc., Upper Montclair, N. J.
Hydraulic & air operated controls

Arcturus Radio Tube Co., 720 Frelinghuysen Ave., Newark, N. J.
Vacuum tubes

Aristo Import Co., Inc., 630 Fifth Ave., New York
Stop watches

Arrow-Hart & Hegeman Electric Co., Hartford, Conn.
Magnetic, mercury & relay switches

Ashton Valve Company, 161 First St., Cambridge, Mass.
Pop, safety & relief valves, pressure gages, gage testers & master pilot & master pressure gages

Askania Regulator Co., 1603 So. Michigan Ave., Chicago, Ill.
Automatic control instruments

Associated Research, Inc., 431 S. Dearborn St., Chicago, Ill.
Vibrotest insulation testing equipment. Special measuring & testing instruments of electrical nature.

Atkins & Co., E. C., 402 So. Illinois St., Indianapolis, Ind.
Electrically operated valves for air, water, oil & steam

Atlas Electric Devices Co., 359 West Superior St., Chicago, Ill.
Fade-Ometer, Weather-Ometer, Launder-Ometer

Atlas Valve Co., 282 South St., Newark, N. J.
Regulator valves

Autocall Co., Shelby, Ohio
Electrical signaling, control & metering devices

Automatic Control Co., 1005 University Ave., St. Paul, Minn.
Circuit switches for automatic level controls, automatic timing & sequence controllers

Automatic Electric Co., 1033 W. Van Buren St., Chicago, Ill.
Telephone, signaling & communication apparatus.

Automatic Electric Mfg. Co., Mankato, Minn.
Time switches & interval timers

Automatic Products Co., 2450 North 32nd St., Milwaukee, Wis.
Solenoid valves

Automatic Scale Co., Inc., 591 Hudson St., New York, N. Y.
Automatic scales

Automatic Switch Co., 41 East 11th St., New York, N. Y.
Solenoid operated valves & automatic electric control apparatus

Automatic Temperature Control Co., Inc., 34 East Logan St., Philadelphia, Pa.
Timers, time control and specialty engineering. Valves & valve controllers, various types of relays.

Automatic Time Stamp Co., 139 Atlantic Ave., Boston, Mass.
Time stamps & job recorders

Automatic Valve Controller Co., Box 268, Tulsa, Okla.
Automatic valve control.

B

Bacharach Industrial Instrument Co., 7000 Bennett St., Pittsburgh, Pa.
Industrial instruments

Bacon Electric Timer Corp., 4513 Brooklyn Ave., Cleveland, Ohio
Relays, switches & controls

Badger Meter Mfg. Co., 2371 North 30th St., Milwaukee, Wis.
Liquid meters

Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland, Ohio
Metering & control equipment for power plants & industrial processes. Power plant instruments; boiler meter, meter combustion control operating directly from boiler meter, three-element feed water control, steam superheat control, desuperheating & pressure reducing control. Also metering & control equipment for sewage treatment, water supply & process industries

Bailey Vibrator Company, 1539 Wood St., Philadelphia, Pa.
Optical glass machines, grinding & polishing machines for optical glass

Baird Associates, University Road, Cambridge, Mass.
Specialized physical & optical instruments including complete line of spectrographic & x-ray diffraction equipment

Baker Compass Co., Melrose, Mass.
Compasses

Baldwin-Southwark Corp., Paschall Post Office, Philadelphia, Pa.
Universal testing machines

Ballantine Labs., Inc., Boonton, N. J.
Artificial ears, electronic voltmeters, sound meters, vibration pickups, throat microphones, telephone receiver test equipment

Ballauf Mfg. Co., D., 621 H St., N. W., Washington, D. C.
Meteorological instruments

Barber-Coleman Co., Rockford, Ill.
Fractional horsepower motors, Valve Operating Devices, Regulating Valves, Thermostats, Controllers, Rotary Switches, Hardness Testers

Barbour Stockwell Co., 205 Broadway, Cambridge Mass.
Tachometers

Barkon-Frink Tube Lighting Co., 23-10 Bridge Plaza South, Long Island City, N. Y.
Daylight lighting

Barnstead Still & Sterilizer Co., Inc., 2 Lanesville Terrace, Boston, Mass.
Water stills

Bastian-Blessing Co., 240 E. Ontario St., Chicago, Ill.
Regulating valves

Bausch & Lomb Optical Co., 635 St. Paul St., Rochester, N. Y.
Optical instruments for industrial, scientific & educational use including microscopes, colorimeters, refractometers, photomicrographic & metallographic equipment, contour measuring projector, optical glass & special optical systems

Beck Bros., 421 Sedgley Ave., Philadelphia, Pa.
Resistors

Beck Co., Harold C., 223 West Mt. Airy Ave., Philadelphia, Pa.
Pyrometer controllers

Becker, Inc., Christian, 92 Reade St., New York, N. Y.
Precision balances & weights, including analytical, assay, magnetically damped, diamond, specific gravity, dairy, druggists, textile.

Becker, Joseph, 630 W. 168th St., New York, N. Y.

Beckmann Co., L., 1008 Jackson, Toledo, Ohio
Surveying instruments

Belfield Co., H., Broad & Hamilton Sts., Philadelphia, Pa.
Valves

Bell & Howell Co., 1801-15 Larchmont Ave., Chicago, Ill.
Motion picture equipment including cameras, projectors & accessories

Bender Warrick Corp., 131 Pierce St., Birmingham, Mich.
Floatless liquid level controls

Please mention THE 1942 INSTRUMENTS INDEX *when writing*

Bendix Aviation Corp., Marine Division, 754 Lexington Ave., Brooklyn, N. Y.
Marine Instruments of all types, annunciators, Autosyn motor ship, telegraphs, marine fittings, marine telephone equipment, general industrial safety & signaling equipment

Benwood Linze Co., 1832 Washington Ave., St. Louis, Mo.
Rectifier power units

Berge, J. & H., 145 Hudson St., New York, N. Y.
Laboratory supplies

Berger & Sons, Inc., C. L., 37 Williams St., Roxbury, Boston, Mass.
Surveying instruments

Best Scientific Glass App. Wks., 2039 Fremont St., Chicago, Ill.

Betts and Betts, 551 West 52nd St., New York, N. Y.
Multiple circuit timers, controls, time delay relays & motor driven & thermostatic interrupters

Biddle Co., James G., 1211 Arch St., Philadelphia, Pa.
Insulation testers, ground testers & ohmmeters, speed-measuring instruments, frequency meters, sliding-contact rheostats

Bin-Dicator Co., 14615 East Jefferson Ave., Detroit, Mich.
Automatic bin level indication & control

Biological Supply Co., 1176 Mount Hope Ave., Rochester, N. Y.
Biological supplies

Black & Decker Mfg. Co., 715 Pennsylvania Ave., Towson, Md.
Truck scales

Bliley Electric Co., 200 Union Station Bldg., Erie, Pa.
Quartz piezo-electric crystals

Bliss & Co., Inc., John, 84 Pearl St., New York, N. Y.
Marine instruments

Blossom Mfg. Co., 79 Madison Co., New York, N. Y.
Instrument covers of transparent fabrics

Bock Machine Co., 3618 Colerain Ave., Cincinnati, Ohio
Erichsen sheet metal testing machine

Bodine Electric Co., 2254 W. Ohio St., Chicago, Ill.
Motors, all types of windings from 1/2000 to 1/6 hp, speed reducer & nonreducer motors

Boekel & Co., Wm., 509-519 Vine St., Philadelphia, Pa.
Laboratory apparatus

Boiler Room Equipment, Inc., 45 West 45th St., New York, N. Y.
Smoke alarms

Boonton Radio Corp., Boonton, N. J.
Radio test instruments

Borden Electric Co., Summit, N. J.
Ground resistance meters

Boston Auto Gage Co., 70 West St., Pittsfield, Mass.
Liquid level gages and allied lines

Bostrom-Brady Mfg. Co., Stonewall & Bailey Sts., Atlanta, Ga.
Surveying instruments

Boulin Instrument Corp., 65 Madison Ave., New York, N. Y.
Chronometric hand tachometers, wound stroboscopes, electrical stroboscope, speed indicators & portable & stationary tachometers

Bowser & Co., Inc., S. F., 1302 E. Creighton Ave., Fort Wayne, Ind.
Liquid meters

Boylston Steam Specialty Co., 116 W. Illinois St., Chicago, Ill.
Regulating valves

Brabender Corp., Rochelle Park, N. J.
Industrial measuring & control apparatus for plastic & viscous materials; semi-automatic moisture testers

Bradley Laboratories, Inc., 82 Meadow St., New Haven, Conn.
Photoelectric cells

Braun Corp., 2260 East 15th St., Los Angeles, Calif.
Chemicals & laboratory supplies

Braun-Knecht-Heimann Co., 576 Mission St., San Francisco, Calif.
Laboratory supplies

Bristol Company, Waterbury, Conn.
Recording & automatic controlling instruments for pressure, vacuum, draft, absolute pressure, humidity, liquid level, flow, pH value, temperature (pyrometers & thermometers) & speed. Included are recording barometers, voltmeters, ammeters, wattmeters, dairy instruments, machine operation, motion & operation recorders, control valves, telemetering instruments, process cycle controllers, coordinated process control, time-temperature & time-pressure controllers, potentiometers, air operated & electric controllers & thermal converters. Variations & combinations of these instruments are offered for applications in the various industries & processes

Brodie Co., Inc., Ralph N., 61st & Lowell Sts., Oakland, Calif.
Positive displacement petroleum meters & accessories

Brooke Engineering Co., Inc., 4517 Wayne Ave., Philadelphia, Pa.
Electrically actuated pressure & flow controllers

Brookfield Engineering Laboratories, Sharon, Mass.
Synchro-lectric viscosimeter

Brooklyn Thermometer Co., Meriden, Conn.
Thermometers & hydrometers

Brown Gravity Meter Corp., P. O. Box 6005, Houston, Tex.
Instruments for measuring earth's gravitational field

Brown Instrument Company, 4482 Wayne Ave., Philadelphia, Pa.
Thermocouple & optical pyrometers, resistance thermometers, pressure thermometers, pressure gages, flow meters, liquid level gages, hygrometers, CO_2 meters, control systems; electric, air-operated & combined electric & air-operated; combustion safety controls, moisture content recorder & controller & furnace atmosphere recorder

Brown & Sharpe Mfg. Co., Providence, R. I.
Machine shop instruments

Brush Development Co., 3331 Perkins Ave., Cleveland, Ohio
Piezoelectric instruments including laboratory microphones, vibration & fluid pulsation pickups, galvanometers, pen oscillographs, surface finish testers, artificial ears, headphones, phonograph pickups & cutters

Buehler, Adolph I., 228 N. La Salle St. & Wacker Dr., Chicago, Ill.
Metallographic laboratory apparatus

Buffalo Apparatus Corp., 180 Main St., Buffalo, N. Y.
Laboratory supplies

Buffalo Meter Co., 2917 Main St., Buffalo, N. Y.
Liquid meters for measurement of cold water, hot water, oils, chemicals. Integrating registers, cumulative, setback, or predetermined control.

Buffalo Scale Co., 1200 Niagara St., Buffalo, N. Y.
Scales

Builders-Providence, Inc., 9 Codding St., Providence, R. I.
High pressure flow, level, weight, pressure & temperature, metering & control instruments

Bullard Co., E. D., 275 Eighth St., San Francisco, Calif.
Gas leak detectors

Bunnell & Company, J. H., 215 Fulton St., New York, N. Y.
Relays & switches

Burgess Battery Co., 500 W. Huron St., Chicago, Ill.
Dry batteries

Burke, Louis, 41 John St., New York, N. Y.
Stop watches and chronometers

Burling Instrument Co., 251-253 Springfield Ave., Newark, N. J.
Temperature controls for laboratories, Industrial processes, furnaces & ovens. (-100° to 1400°F.) Standard tubes or special alloys & ranges.

Burlington Instrument Corp., Burlington, Iowa
Electrical control apparatus

Burrell Technical Supply Co., 1942 Fifth Ave., Pittsburgh, Pa.
Scientific instruments & laboratory supplies

Burt Scientific Labs., R. C., 1212 E. Green St., Pasadena, Calif.
Special instruments

Burton Mfg. Co., 3853 N. Lincoln St., Chicago, Ill.
Microscopic accessories

Burton-Rogers Co., 857 Boylston St., Boston, Mass.
Electrical instruments

Bushnell and Nevius, 913 N. LaCienega Blvd., Los Angeles, Calif.
Control apparatus

C

Calculagraph Co., 50 Church St., New York, N. Y.
Elapsed time indicator

Calibron Products, Inc., 51 Lakeside Ave., West Orange, N. J.
Special apparatus

Calkins Co., 934 S. Main St., Los Angeles, Calif.

Callahan & Co., E. J., 14 W. Barre St., Baltimore, Md.

Calta Glass Wks., 2158 Ogden Ave., Chicago, Ill.

Cambosco Scientific Co., Waverley, Mass.

Cambridge Instrument Co., Inc., Grand Central Terminal, New York, N. Y.
Scientific & industrial instruments

Cameron Surgical Specialty Co., 666 W. Division St., Chicago, Ill.

Campbell Electric Co., Lynn, Mass.
Transformers, high frequency & X-ray equipment

Campion Labs., Don C., 9088 Alpine Ave., Detroit, Mich.
Liquid meters for small flows

Cardwell Mfg. Corp., Allen D., 81 Prospect St., Brooklyn, N. Y.
Variable & fixed air condensers

Cargille, R. P., 118 Liberty St., New York, N. Y.
Chemical laboratory & photographic devices

Cash Company, A. W., Decatur, Ill.
Combustion control instruments.

Central Scientific Co., 1700 Irving Park Blvd., Chicago, Ill.
Scientific instruments & laboratory apparatus

Central Station Steam Co., 2910 E. Woodbridge St., Detroit, Mich.
Rotary type condensate meter

Certified Gauge & Inst. Co., 34-18 Northern Blvd., Long Island City, N. Y.
Pressure gages

Chace Co., W. M., 1600 Beard Ave., Detroit, Mich.
Thermostatic bimetals

Chaslyn Co., 4527 Ravenswood Ave., Chicago, Ill.
Storage battery testers

Chatillon & Sons, John, 85 Cliff St., New York, N. Y.
Iso-elastic springs

Chelsea Clock Company, 284 Everett Ave., Chelsea, Mass.
Clocks & clock movements

Chemical Rubber Co., 1933 West 114th St., Cleveland, Ohio
Laboratory supplies

Chicago Apparatus Co., 1735 No. Ashland Ave., Chicago, Ill.
Laboratory supplies

Chicago Dial Indicator Co., 544 W. Washington, Chicago, Ill.
Machinist's dial indicators

Chicago Surgical & Electrical Co., 324 W. Superior St., Chicago, Ill.

Cincinnati Clock & Instrument Co., 1113 York St., Cincinnati, Ohio
Circuit breaker analyzer

Cincinnati Scientific Co., 224 Main St., Cincinnati, Ohio
Laboratory supplies

Cincinnati Time Recorder Co., 1733 Central Ave., Cincinnati, Ohio
Time recorders

Claflin Co., Geo. L., 150 Dorrance St., Providence, R. I.

Clamp Inst. Co., Webster, Mass.
Aircraft instruments, thermometers & pressure & vacuum gages

Clare & Co., C. P., 4719 Sunnyside Ave., Chicago, Ill.
Relays, electric counters & electro mechanical specialties

Clark Blast Meter Co., Chas. J., Gladbrook, Iowa
Foundry blast meters & pressure gages

Clark & Sons Co., Alvan, 58 Day St., West Somerville, Mass.
Optical & astronomical instruments

Clark, Jr. Pneumatic Tool Co., Jas., 143 17 Ave., Paterson, N. J.
Adjustable snap gages

Clarostat Mfg. Co., Inc., 285 North Sixth St., Brooklyn, N. Y.
Resistors

Clay-Adams Co., Inc., 44 E. 23 St., New York, N. Y.
Angle & micro centrifuges, compact balances, analytical weights, microscope slides & cover glasses, glass & porcelain ink, tuning forks

Clebar Watch Co., 551 Fifth Ave., New York, N. Y.
Stop watches, timers & chronographs

Cleveland Gas Meter Co., 2180 East 65th St., Cleveland, Ohio
Tin case gas meters

Clifford Mfg. Co., 584 E. First St., Boston, Mass.
Metallic bellows & diaphragms; thermostatic assemblies; packless valves

Clough-Brengle Co., 5501 Broadway, Chicago, Ill.
Electrical instruments, communication testing instruments

Coats Machine Tool Co., Inc., 110 West 40th St., New York, N. Y.
Spring testers

Cochrane Corp., 17th St., Allegheny Avenue, Philadelphia, Pa.
Flowmeters, electrical & mechanical; liquid level meters & controllers; weir meters; pressure & temperature recorders; blow off & relief valves

Cole Co., H., 24 North High St., Columbus, Ohio
Surveying instruments

Coleman Electric Co., Inc., 310 Madison St., Maywood, Ill.
Electrical measuring instruments for technical applications

Colloid Equipment Co., Inc., 50 Church St., New York, N. Y.
Laboratory apparatus

Columbia Electric Mfg. Co., 4519 Hamilton Ave., Cleveland, Ohio
Rheostats, instruments, shunts, switchboards & special electrical equipment

Columbia Metal Box Co., 260 E. 143rd St., New York, N. Y.

Commerce Pattern Foundry & Machine Co., 2211 Grand River Ave., Detroit, Mich.
Balancing machines

Commercial Engineering Labs., 4612 Woodward Ave., Detroit, Mich.
Laboratory instruments for automotive, aircraft, railway & allied industries; air flow indicators, direct pressure & piezo-ray engine indicators, fuel flow indicators, magnetic gages, torsional vibration indicators (piezo-ray), recorders (torsiographs) & recording instruments for car performance & riding comfort

Commercial Iron Works, 2426 Porter St., Los Angeles, Calif.
Orifice fittings

Comtor Company, 87 Rumford Ave., Waltham, Mass.
Precision internal & external comparator-type diameter gages

Conant, George H., 719 Watson St., Ripon, Wis.

Connelly Iron Sponge & Governor Co., 3154 So. California Ave., Chicago, Ill.
Gages & manometers, B T U indicator & H_2S tester

Consolidated Ashcroft Hancock Co.
See Manning, Maxwell & Moore, Inc.

Consulting & Engineering Co., Carson St. & Terminal Way, Pittsburgh, Pa.
Combustion controllers

Continental Electric Co., Geneva, Ill.
Photoelectric tubes & equipment

Control Corporation, 600 Stinson Boulevard, Minneapolis, Minn.
Automatic & remote control equipment

Controls, Inc., Towaco, N. J.
Control valves; motor driven time delay relays; process timing devices

Cook Electric Co., 2700 Southport Ave., Chicago, Ill.
Electrical control devices, metal bellows, vapor motors & telephone protective & distributing apparatus

Cook Research Laboratories, L. H., Menlo Park, California
Precision testing instruments for oil industry, oil well cement testing equipment, combustible gas indicators, depth pressure recorders

Coors Porcelain Co., Golden, Colo.
Chemical & scientific porcelain

Corbin Screw Corp., New Britain, Conn.
Tachometers & speedometers

Cornell-Dubilier Electric Corp., So. Plainfield, New Jersey
Mica, dykanol, paper & wet & dry electrolytic capacitors

Corning Glass Works, Corning, N. Y.
Technical glassware

Cramer Co., Inc., R. W., Centerbrook, Conn.
Interval timers, running time meters, time switches, signal control switches

Crosby Steam Gage & Valve Co., 30 Church St., New York, N. Y.
Safety & relief valves, gages, recorders, testers & steam engine indicators

Curtin & Co., W. H., 2019 Franklin Ave., Houston, Tex.
Laboratory supplies

Cutler-Hammer, Inc., 315 North 12th St., Milwaukee, Wis.
Electric motor control, safety switches, motor driven valve operators, gas calorimeters, gas mixing & stabilizing control, resistors

D

Daigger & Co., A., 159 W. Kinzie St., Chicago, Ill.
Laboratory supplies

Daniel Orifice Fitting Co., 3350 U. P. Ave., Los Angeles, Calif.
Orifice fittings

Daven Co., 158 Summit St., Newark, N. J.
Attenuators, calibrating equipment for electrical instruments & resistors

Davis Emergency Equipment Co., Inc., 45 Halleck St., Newark, N. J.
Inflammable gas alarms

Davis Regulator Co., 2541 So. Washtenaw Ave., Pilsen Sta., Chicago, Ill.
Valves

Dearborn Gage Co., 22038 Beech St., Dearborn, Mich.
Chromium plated gage blocks

Defender Automatic Regulator Co., 308 S. 8th St., St. Louis, Mo.
Industrial instruments

De Jur-Amsco Corp., Shelton, Conn.
Photoelectric exposure meters, electrical, radio & photographic products

Delmhorst, Wm. J., 90 West St., New York, N. Y.
Moisture detectors

Deming Indicator Co., 108 Fountain Ave., Dayton, Ohio
Test indicators

Demuth Glass Works, Inc., Wythe Ave. at N. 11th St., Brooklyn, N. Y.

Denominator Co., Inc., 261 Broadway, New York
Group counting machines

Denver Fire Clay Co., 2301 Blake St., Denver, Colo.
Specialized industrial control equipment for power plant & processing industries, laboratory specialties

D'Este Co., Julien, 69 A Street, So. Boston, Mass.
Control valves

Detecto Scales, Inc. see Jacobs Bros. Co., Inc.

Detroit Air Meter Co., P. O. Box 1473, Detroit, Mich.
Air flowmeters

Detroit Lubricator Co., 5900 Trumbull Ave., Detroit, Mich.
Automatic controls & equipment for air conditioning

Detroit Testing Machine Co., Grinnell Ave., Detroit, Mich.
Testing machines

Deutschmann Corp., Tobe, Canton, Mass.
Equipment for locating, eliminating, and measuring radio noise; electrolytic, paper dielectric & oil type capacitors

Dickson Co., 7420 Woodlawn Ave., Chicago, Ill.
Furnace controls

Dietert Co., Harry W., 9330 Roselawn Ave., Detroit, Mich.
Sand testing equipment; immersion pyrometers, moisture testers, accessories for spectrographic laboratories

Dietzen Co., Eugene, 2425 Sheffield Ave., Chicago.
Drafting & surveying instruments.

Dillon & Co., Inc., W. C., 5410 W. Harrison St., Chicago, Ill.
Traction dynamometers, tensile machines, thermometers

Distillation Products, Inc., 755 Ridge Road West, Rochester, N. Y.
High vacuum pumps, low vapor pressure fluids & auxiliary equipment

Doerr Glass Co., Inc., 500 Peach St., Vineland, N. J.

Dongan Electric Mfg. Co., 2987 Franklin St., Detroit, Mich.
Transformers

Doolittle Radio, Inc., 7421 Loomis Blvd., Chicago, Ill.
Frequency monitor

Dorr-Patterson Engineering Co., 3362 Wight St., Detroit, Mich.
Physical testing machines

Drafto Co., Cochranton, Pa.
Drafting machines

Driftmeter, Inc., 616 Exchange Bank Bldg., Tulsa, Okla.
Oil well instruments

Dubrovin, John, 2946 N. Kenneth Ave., Chicago, Ill.
Mercurial vacuum gage, absolute type

Ducommun Co., M., 580 Fifth Ave., New York, N. Y.
Coil-spring stopwatches

Du Mont Labs., Inc., Allen B., 2 Main Ave., Passaic, N. J.
Cathode-ray oscillographs, cathode-ray tubes, associated electronic equipment, television control, studio & transmitting equipment

Duncan Electric Mfg. Co., Lafayette, Ind.
A-c. & d-c. watthour meters, service & switchboard types; portable test meters, appliance meters & instrument transformers

Dunn, Inc., Struthers, 1310 Cherry St., Philadelphia, Pa.
Relays, timing devices, electric counters, thermostats

Durant Manufacturing Co., 1930 N. Buffum St., Milwaukee, Wisc.
Counting & measuring machines

Dwyer Mfg. Co., F. W., 565 W. Washington Blvd., Chicago, Ill.
Portable & stationary draft gages, CO_2 indicators & combustion testing sets

E

Eagle Signal Corp., 202 20th St., Moline, Ill.
Industrial control devices, traffic signal controllers & sign flashers

Eastern Engineering Co., 45 Fox St., New Haven, Conn.
Laboratory pumps, stirrers & thermoregulators

Eastern Science Supply Co., 7-9 High St., Brookline, Mass.
Meteorological instruments

Eastern Scientific Co., 51 Bassett St., Providence, R. I.

Eastern Specialty Co., 3617 N. 8th St., Philadelphia, Pa.
Testing equipment for checking & maintenance of all types of electricity meters such as watthour meters, demand instruments, etc. Special apparatus for load survey work.

Eberbach & Sons, Ann Arbor, Mich.
Laboratory furniture

Eby, Inc., Hugh H., 4700 Stenton Ave., Philadelphia, Pa.
Relays & radio parts

Eclipse Aviation, Div. of Bendix Aviation Corp., Bendix, N. J.
Aircraft electrical & mechanical accessories

Economy Electric Devices Co., 37 West Van Buren St., Chicago, Ill.
Electric meters, watthour & amperehour, for street and electric railways and trolley busses

Edelmann & Co., E., 2332 Logan Blvd., Chicago, Ill.
Automotive test instruments

Edison, Inc., Thomas A., Edison Electrical Controls division, West Orange, N. J.
Sealed-in-glass control devices, including thermostatic switches, fire detection thermostats, & timing relays. Hermetically sealed thermostatic valves. Special control equipment

Eimer & Amend, 635 Greenwich St., New York, N. Y.
Biological & chemical laboratory apparatus & supplies

Eitzen Co., Louis C., 17 W. 60 St., New York, N. Y.
Extensometers

Electric Auto-Lite Co., Chrysler Bldg., New York, N. Y.
Pressure & vacuum gages, speedometers, tachometers & thermometers

Electric Controller & Mfg. Co., 2700 East 79th St., Cleveland, Ohio
Electrical controllers

Electric Heat Control Apparatus Co., 507 Fifth Ave., New York, N. Y.
Laboratory ovens

Electric Indicator Corp., 21 Parker Ave., Stamford, Conn.
Synchronous motors, position indicators, level controls, signalling devices

Electric Sorting Machine Co., Michigan Trust Bldg., Grand Rapids, Mich.
Color analysers

Electric Speed Indicator Co., 1652 Onondaga, Lakewood, Ohio
Precision electric tachometers & remote position indicators

Electric Switch Corp., 1409 Union St., Columbus, Ind.
Mercury switches

Electric Tachometer Corp., 1358 Spring Garden St., Philadelphia, Pa.
Speed indicators & recorders, electric & mechanical counters

Electric Valve Mfg. Co., 64 Murray, New York, N. Y.
Electrically operated valves

Electrical Coil Winding Co., 2736 Saunders St., Camden, N. J.
Magnet & solenoid coils

Electrical Facilities Inc., 4224 Holden St., Oakland, Calif.
Apparatus for electrical measuring & testing, including precision transformers, watthour meter and instrument transformer testing equipment; rectifier apparatus

Electrical Research Products Inc., 195 Broadway, New York, N. Y.
Instruments are offered for acoustic, noise or vibration control problems, in the product development laboratory, for field testing and for routine production testing applications

Electrical Testing Labs., 80th St. & East End Ave., New York, N. Y.
Electrical testing & inspection

Electrimatic Corp., 2100 Indiana Ave., Chicago, Ill.
Automatic control valves & controls, regulating valves, Pressure, temperature & electrical actuation

Electro-Medical Laboratory, Inc., Holliston, Mass.
Neurological & allied medical instruments & general electronic apparatus

Electro Products Laboratories, 549 West Randolph St., Chicago, Ill.
Battery eliminators & rectified A.C. devices

Electrocon Corp., 6 Varick St., New York, N. Y.
Vibration measuring instruments & equipment for dynamic balancing of rotating machines

Electronic Laboratory, 306 S. Edinburgh Ave., Los Angeles, Calif.
Photo-electric instruments; also photoconductive cells.

Electronic Products Co., St. Charles, Ill.
Electronic devices

Electronic Research Laboratory, Niles Center, Illinois
Color analysis apparatus

Electrons, Inc. of Delaware, 127 Sussex Ave., Newark, N. J.
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Elematic Mfg. Co., 12757 S. Western Ave., Blue Island, Ill.
Pyrometers

Elgin National Watch Co., Elgin, Ill.
Watches, clocks, aircraft instruments, navigational instruments

Ellison Draft Gage Co., 214 West Kenzie St., Chicago, Ill.
Manometers, draft gages, orsats

Elsbert Mfg. Co., Inc., 910 W. Lake St., Chicago, Ill.
Remote control fractional horsepower motors

Emerson Apparatus Co., 171 Tremont St., Melrose, Mass.
Calorimeters

Engel, Inc., H. C. M., P. O. Box 233, Sidney, N. Y.
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Engelhard, Inc., Charles, 233 New Jersey R. R. Ave., Newark, N. J.
Industrial instruments

Engineering Laboratories, Inc., 705 Kennedy Bldg., Tulsa, Okla.
Seismic exploration equipment, vibration detectors, petroleum engineering devices, signalling equipment

Eppley Laboratory Inc., 12 Sheffield Ave., Newport, R. I.
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Erwin Co., O. E., 1274 Augusta Blvd., Chicago, Ill.

Ess Instrument Co., George Washington Bridge Plaza, Fort Lee, N. J.
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Esterline-Angus Co., Inc., P. O. Box 596, Indianapolis, Ind.
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Everson Mfg. Co., 214 W. Huron St., Chicago, Ill.
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Exact Weight Scale Co., 944 West 5th Ave., Columbus, Ohio
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F

Faichney Instrument Corp., Watertown, N. Y.
Laboratory thermometers

Fairbanks, Morse & Co., 600 So. Michigan Ave., Chicago, Ill.
Scales

Falstrom Co., Main Ave. & D. L. & W. R. R., Passaic, N. J.
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Farrel-Birmingham Co., Inc., 25 Main St., Ansonia, Conn.
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Fassett Co., Inc., C. M., 209 North Wall St., Spokane, Wash.
Laboratory supplies

Fecker, J. W., 2016 Perrysville Ave., N. S., Pittsburgh, Pa.
Astronomical instruments

Federal Pneumatic Systems, Inc., 127 N. Dearborn St., Chicago, Ill.
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Fenwal, Inc., 3 Main St., Ashland, Mass.
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Ferner Co., R. Y., 131 State St., Boston, Mass.
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Ferranti Electric, Inc., 30 Rockefeller Plaza, New York, N. Y.
Electrical instruments

Ferris Instrument Corp., Boonton, N. J.
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Fidelity Machine Co., 3906 Frankfort Ave., Philadelphia, Pa.
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J

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K

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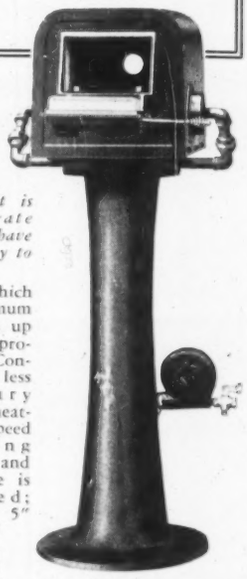

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M

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Laboratory apparatus & supplies

Magnaflux Corp., 5903 Northwest Highway, Chicago, Ill.
Magnetic inspectors

Magnatrol Valve Corp., 52 Beekman St., New York, N. Y.
Valves

Magnavox Co., Inc., Fort Wayne, Indiana
Electrolytic capacitors

Magnetic Analysis Corp., 42-44 12th St., Long Island City, N. Y.
Magnetic inspectors for uniform cross-sectional steel

Magnetic Gauge Co., 60 E. Bartges St., Akron, Ohio
Continuous gages, sheet & strip

Mahady Co., E. P., 857 Boylston St., Boston, Mass.

Mahoney, James A., 140 West 42nd St., New York, N. Y.
Products of glass

Mallory & Co., Inc., P. R., Indianapolis, Ind.
Capacitors, relays & switches

Manning, Maxwell & Moore, Inc., Bridgeport, Conn.
Thermometers, glass, dial & recording; controllographs; indicating & recording controllers; diaphragm motor valves; tachometers, barometers; & hygrometers

Marine Compass Co., Hanover, Mass.
Marine instruments

Maris Co., John M., 528 Arch St., Philadelphia, Pa.

Marsh Corp., Jas. P., 2073 Southport Ave., Chicago, Ill.
Indicating gages, recording gages, dial thermometers, recording thermometers, refrigeration service instruments, temperature controlling systems, valves for heating systems

Marston Co., C. A., 506 Washington St., Braintree, Mass.
Time study instruments

Martindale Electric Co., Box 2669, Lakewood Branch, Cleveland, Ohio
Insulation testers

Martin-Decker Corp., 3431 Cherry Ave., Long Beach, Calif.
Torque gages & pull rod dynamometers

Mason-Neilan Regulator Co., 1190 Adams St., Boston, Mass.
Industrial control equipment for pressure temperature, flow, liquid level, combustion & ratio: diaphragm control valves; pressure & vacuum regulators; level controllers; pump speed governors; pump pressure regulators; pipe strainers

McAlear Mfg. Co., 1901 S. Western Ave., Chicago, Ill.
Manual & automatic controls for air, oil gas, steam, chemicals, pure food, acid & alkali

McCord Radiator & Mfg. Co., 2585 E. Grand Ave., Detroit, Mich.
Liquid meters for low flows

McCorkle Co., D. H., 6th & Bancroft Way, Berkeley, Calif.
Thermostats & electric gas valves

McDonnell & Miller, Room 1316, Wrigley Bldg., Chicago, Ill.
Boiler controls

McDonnell Odometer Co., 3501 So. Kedzie Ave., Chicago, Ill.
Counters

McFarlin Co., 29 West Marion Ave., Youngstown, Ohio
Leak detectors

McGraw-Hill Book Co., 330 West 42 Street, New York, N. Y.
Technical books

McKesson-Doster-Northington Co., 1706 First Ave., Birmingham, Ala.
Laboratory supplies

McNab of Bridgeport, Inc., Bridgeport, Conn.
Marine appliances, torsionmeters, salinity indicators, revolution counters

McNeill Engineering Equipment Co., T. W., 4057 West Van Buren St., Chicago, Ill.
Smoke alarms

Measurements Corp., Boonton, N. J.
Radio Frequency Testing & Measuring Devices

Mellophone Corp., 714 University Ave., Rochester, N. Y.
Rectifiers

Merco Nordstrom Valve Co., 400 Lexington Ave., Pittsburgh, Pa.
Control valves & valve position indicators

Mercoid Corp., 4201 Belmont Ave., Chicago, Ill.
Automatic controls for heating, refrigeration, air conditioning, & various industrial applications

Mercon Regulator Co., 2357 N. 29th St., Milwaukee, Wisc.
Power plant specialties in regulation of pressure, level, rate of flow, proportioning & temperature

Meriam Co., 1955 W. 112th St., Cleveland, Ohio
Manometers, draft gages, indicating flow meters for steam, oil, gas, air, water, tank liquid level gages

Merkle-Korff Gear Co., 214 North Morgan St., Chicago, Ill.
Motorized speed reducers: induction, synchronous, reversing, d-c., universal motors

Merrick Scale Mfg. Co., Autumn St., Passaic, N. J.
Automatic continuous weighing machines

Merritt Engg. & Sales Co., Inc., 120 So. Niagara St., Lockport, N. Y.
Consistency controls

Metals Research Apparatus, Inc., Corliss Station, Pittsburgh, Pa.
Industrial instruments & apparatus

Meter Devices Co., 1001 Prospect Ave., S. W., Canton, Ohio
Electrical test devices

Metzger & Son, F. F., 2600 N. 6 St., Philadelphia, Pa.
Extensometers

Meyer, Max, 76 Willoughby St., Brooklyn, N. Y.

Meyer Governor Co., 284 Baker Bldg., Minneapolis, Minn.
Long-distance recording, indicating, and contact-making instruments; gage pulsation protectors

Meylan, A. R. & J. E., 264 West 40th St., New York, N. Y.
Stop watches

M-G Gage Co., 107 Franklin St., Syracuse, N. Y.
Snap gages

Mico Instrument Co., 10 Arrow St., Cambridge, Mass.
Precision devices in industrial & scientific fields

Microchemical Service, 30 Van Zandt Ave., Douglaston, N. Y.
Microchemical laboratory apparatus

Micro Switch Corp., Spring St., Freeport, Illinois
Snap action switches

Mid-West Dynamometer & Engg. Co., Western Ave., at 60 St., Chicago, Ill.
Dynamometers

Millen Mfg. Co., James, 150 Exchange St., Malden, Mass.
Radio test instruments

Miller Co., B. F., P. O. Box 455, Trenton, N. J.
Electrical testing devices

Miller Corp., Wm., 362 W. Colorado St., Pasadena, Calif.
Machine shop gages

Millers Falls Co., Greenfield, Mass.
Machine shop gages

Million Radio & Television, 685 West Ohio St., Chicago, Ills
Radio & allied testing instruments

Milwaukee Gas Specialty Co., 2025 W. Clybourn, Milwaukee, Wis.
Valves, fittings & safety shut-offs for gas fired equipment

Minerallac Electric Co., 25 N. Peoria St., Chicago, Ill.
Potential detectors

Mine Safety Appliances Co., Braddock, Thomas and Meade Sts., Pittsburgh, Pa.
Instruments for the detection, analysis & recording of toxic and combustible gases; instruments for sampling, counting & measuring dust particles

Mine & Smelter Supply Co., 1422-17th St., Denver, Colo.
Industrial equipment & supplies

Minneapolis Elec. & Construction Co., 80 South 12th St., Minneapolis, Minn.
Wire length measuring machines

Minneaapolis-Honeywell Reg. Co., 2727 - 4 Ave., S. Minneapolis, Minn.
Heating, ventilating and air conditioning control equipment; thermostats; safety controls; motor and diaphragm operated valves; relays; furnace controllers

Moeller Instrument Co., 132nd St. & 89th Ave., Richmond Hill, N. Y.
Thermometers, hydrometers, etc.

Moist-O-Meter, Inc., Board of Trade Bldg., Kansas City, Mo.
Moisture testers

Moisture Register Co., 5117 Kinsie, Los Angeles, Calif.
Moisture testing instruments & devices

Moline Furniture Works, Moline, Ill.
Laboratory furniture

Monarch Manufacturing Co., 3341 Belmont Ave., Chicago, Ill.
Radio set testers

Monitor Controller Co., Gay, Lombard & Frederick Sts., Baltimore, Md.
Electrical controllers

Moore Products Co., H & Lycoming Sts., Philadelphia, Pa.
Industrial instruments

Morehouse Machine Co., York, Penna.
Proving rings

Morey and Jones, Ltd., 922 So. Hemlock St., Los Angeles, Calif.
Recording & indicating flow meters

Morse Twist Drill & Machine Co., New Bedford, Mass.
Gear testers

Mott-Smith Corp., 1505 Shell Bldg., Houston, Texas
Geophysical instruments

Munsell Color Co., Inc., 10 E. Franklin St., Baltimore, Md.
Color comparators

Muter Company, 1255 S. Michigan Ave., Chicago, Ill.
Radio & electrical products

N

Nashville Surgical Supply Co., 401 Church St., Nashville, Tenn.

Nathan Mfg. Co., 250 Park Ave., New York, N. Y.
Valves

National Airoil Burner Co., 1284 E. Sedgley Ave., Philadelphia, Pa.
Liquid level controllers

National Aluminate Corp., 6216 West 66th St., Chicago, Ill.
Conductivity meters

National Brass Co., 1600 Madison St., S. E., Grand Rapids, Mich.
Combustion & draft controllers

National Carbon Co., Inc., P. O. Box 6087, Cleveland, Ohio
Accelerated weathering testers

National Electric Controller Co., 5305 Ravenswood Ave., Chicago, Ill.
Rheostats

National Engineering Products, Inc., Commerce & Savings Bldg., Washington, D. C.
Pressure gage equalizers

National Instrument Co., 44 School St., Boston, Mass.
Electro-mechanical instruments & devices

National Meter Co., 4207 First Ave., Brooklyn, N. Y.
Water, oil & gasoline meters

National Research Corp., 100 Brookline Ave., Boston, Mass.
Optical products

National Scientific Corp., 2141 W. North Ave., Chicago, Ill.

National Technical Labs., 820 Mission St., Pasadena, Calif.
Beckman pH instruments and electro-metric pH equipment for completely automatic indication, control & recording of pH in large scale industrial processes

National Time & Signal Corp., 600 East Milwaukee Ave., Detroit, Mich.
Timers for welding & industrial process control

Natural Gas Equipment Inc., 541 Petroleum Securities Bldg., Los Angeles, Calif.
Furnace controllers

Negus, T. S. & J. D., 69 Pearl St., New York, N. Y.
Nautical instruments

Nelson Section Liner Co., 727 N. Seventh St., DeKalb, Ill.
Drawing instrument

Nelson Vacuum Pump Co., Geo. F., 2918 Fulton St., Berkeley, Calif.
High vacuum pumps

Neptune Meter Co., 50 W. 50th St., New York, N. Y.
Liquid meters

Newark Scale Works, 10-12 Hobson St., Newark, N. J.
Scales

N. J. Laboratory Supply Co., 235 Plane St., Newark, N. J.
Laboratory supplies

New Jersey Meter Co., Plainfield, N. J.
Compressed air meters, separators for removing water & oil from compressed air lines, liquid flow indicators with low flow signalling circuit.

N. Y. Laboratory Supply Co., Inc., 530 Broadway, New York, N. Y.
Laboratory supplies

New York Scientific Supply Co., 111 East 22nd St., New York, N. Y.
Laboratory supplies

Niagara Electrical Instrument Co., 725 Genesee Bldg., Buffalo, N. Y.
Electrical power analyzer

Niehoff & Co., C. E., 4925 Lawrence Ave., Chicago, Ill.
Auto test equipment

Northern Equipment Company, 1945 Grove Drive, Erie, Pa.
Boiler feed control

Norton Co., Worcester, Mass.
Refractory laboratory ware, porous plates & tubes

Norton Electrical Instrument Co., 101 Hilliard St., Manchester, Conn.
Electrical instruments

Notheifer Winding Laboratories, 109 Albemarle Ave., Trenton, N. J.
Transformers

Nurnberg Thermometer Co., Inc., 397 Bridge St., Brooklyn, N. Y.
Thermometers & Hydrometers

Nye, Inc., Wm. F., New Bedford, Mass.
Instrument & watch oils

O

Ohio Injector Co., 3 Main St., Wadsworth, Ohio
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Ohmer Fare Register Co., 740 Bolander Ave., Dayton, Ohio
Mileage recorders

Ohmite Mfg. Co., 4826 W. Flournoy St., Chicago, Ill.
Close control rheostats, fixed & adjustable power resistors, precision & non-inductive resistors, attenuators, tap switches and R. F. chokes.

Olsen Testing Machine Co., Tinius, 500 N. 12th St., Philadelphia, Pa.
Testing machines

Omega Machine Co., 4010 Penn Ave., Kansas City, Mo.
Chemical feeding equipment for dry or liquid materials, by volume or by weight

Orton Jr. Ceramic Foundation, Edward, 1445 Summit St., Columbus, Ohio
Seger cones

P

Pacific Biological Labs., Pacific Grove, Calif

Pacific Scientific Co., Inc., Bendix Bldg., Los Angeles, Calif.
Cable tension indicator

Pacific Tool & Supply Co., 344 N. Vermont Ave., Los Angeles, Calif.
Inside micrometers, telescope gages

Palmer Co., 2501 Norwood Ave., Cincinnati, Norwood, Ohio
Industrial indicating "Red-Reading-mercury" thermometers & dial thermometers

Palo-Myers, Inc., 81 Reade St., New York, N. Y.
Laboratory supplies

Paprex Co., 24 Water St., Wakefield, Mass.
Paper plant test instruments

Paragon Electric Co., 37 W. Van Buren St., Chicago, Ill.
Timers

Park Sales Co., 3 Park Place, New York, N. Y.
Micrometers and calipers

Parks-Cramer Co., Fitchburg, Mass.
Humidity, heat & air change control, wet bulb temperature regulators

Parr Instrument Co., 222 52nd St., Moline, Ill.
Combustion bombs, calorimeters, hydrogenation apparatus, melting point apparatus

Partlow Corp., 2 Campion Rd., New Hartford, N. Y.
Temperature indicators & controllers, time delay relays

Pastor Shop Watch Co., 43 East Main St., Waterbury, Conn.
Stop watches

Patterson Screen Co., Towanda, Pa.
X-Ray intensifying & fluoroscopic screens

Paulson & Co., Henry, 37 So. Wabash Ave., Chicago, Ill.
Watch checking instrument

Paulstick & Sons, H., 2124 Fulton St., Brooklyn, N. Y.
Thermometers

Paver-Sills Co., 4101 Ravenswood Ave., Chicago, Ill.
Vehicular counters

Payne Furnace & Supply Co., Beverly Hills, Calif.
Domestic & commercial gas controls

Penberthy Injector Co., 1242 Holden St., Detroit, Mich.
Liquid level gages

Penn Electric Switch Co., Box 556, Goshen, Ind.
Automatic controls for pressure, temperature, humidity, liquid level; also mechanically actuated unit switches. Specialized controls for refrigeration, air conditioning, heating, pumps, air compressors.

Perfex Corp., 415 W. Oklahoma Place, Milwaukee, Wis.
Automatic temperature controls for oil burners, stokers, gas burners, refrigeration & air conditioning

Perkin-Elmer Corp., 535 Hope St., Glenbrook, Conn.
Optical instruments

Perkins & Son, Inc., B. F., Holyoke, Mass.
Testers for leather, paper & textiles

Permo Products Corp., 6415 Ravenswood Ave., Chicago, Ill.
Instrument pivots & contacts

Permutit Company, 330 West 42nd St., New York, N. Y.
Indicators & recorders for CO_2, specific gravity of natural, manufactured or process gases, exhaust gas analysis, other uses where gas density guides operation

Petrometer Corp., 42-26 28 St., Long Island City, N. Y.
Distant reading, liquid level tank gages

Pfaltz & Bauer, Inc., Empire State Bldg., New York, N. Y.
Laboratory control instruments

Philadelphia Thermometer Co., 915 Filbert St., Philadelphia, Pa.
Instruments for temperature indication, control & regulation

Phipps and Bird, Inc., Richmond, Va.
Laboratory apparatus & chemicals

Photobell Corp., 116 Nassau St., New York, N. Y.
Photoelectric equipment

Photoelastic Company, 55 W. 42nd St., New York, N. Y.
Photoelastic polariscopes

Photoswitch, Inc., 21 Chestnut St., Cambridge, Mass.
Industrial photoelectric controls including counting equipment, electronic timers & special electronic controls, smoke controls

Photovolt Corp., 95 Madison Ave., New York, N. Y.
Photo-electric elements, photometers, electronic timing devices, photo-electric colorimeters, photo-electric exposure meters, densitometers

Pho-Tron Instrument Co., 5713 Euclid Ave., Cleveland, Ohio
Photoelectric colorimeters

Physicists Research Co., 343 S. Main St., Ann Arbor, Mich.
Specialists in solution of unusual industrial research jobs, with special experience in machinery noise reduction, development of special instruments, & measurement of surface irregularities

Pickering Governor Co., Portland, Conn.
Governors

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Pike & Co., E. W., Elizabeth, N. J.
Illuminated magnifiers & microscopes

Pioneer Instrument Division of Bendix Aviation Corp., Bendix, N. J.
Aircraft instruments

Pitometer Log Corp., 206 Lafayette St., New York, N. Y.
Pitot tube flowmeters

Pittsburgh Equitable Meter Co., 400 N. Lexington Ave., Pittsburgh, Pa.
Gas & liquid meters, gas pressure regulators & accessories

Pittsburgh Instrument & Machine Co., 1026 Reedsdale St., Pittsburgh, Pa.
Brinell Machines, alternating impact machines, surveying instruments

Pittsburgh Taximeter Co., Point Bldg., Pittsburgh, Pa.
Vehicle recorders

Pneumatic Scale Corp. Ltd., Norfolk Downs Station, Quincy, Mass.
Packaging scales

Pneumercator Co., Inc., 305 E. 46th St., New York, N. Y.
Level indicators

Polarized Products Corp., 113 University Place, Whitestone, L. I., N. Y.
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Polarizing Instrument Co., 630 Fifth Ave., New York, N. Y.
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Powers Regulator Co., 2734 Greenview Ave., Chicago, Ill.
Controls for air conditioning, temperature & humidity; also water temperature controls, dial indicating & recording thermometers & steam traps

Practical Instrument Co., 2717 N. Ashland Ave., Chicago, Ill.
Recording thermometers & operation recorders

Pratt & Whitney, Div. Niles-Bement-Pond Co., Hartford, Conn.
Machine shop instruments

Precision Apparatus Corp., 647 Kent Ave., Brooklyn, N. Y.
Radio test instruments

Precision Gage & Tool Co., 320 East 3rd St., Dayton, Ohio
Machine shop gages

Precision Resistor Co., 334 Badger Ave., Newark, N. J.
Resistors

Precision Scientific Co., 1736 N. Springfield Ave., Chicago, Ill.
Standard & custom-built laboratory equipment

Precision Thermometer & Instrument Co., 1434 Brandywine St., Philadelphia, Pa.
Scientific instruments

Precision Tube Company, 3824-26-28 Terrace St., Philadelphia, Pa.
Fine tubing & metal shielded wire

Preferred Utilities Mfg. Corp., 31 West 60th St., New York, N. Y.
Boiler plant instruments

Premier Crystal Laboratories, Inc., 63 Park Row, New York, N. Y.
Piezo electric quartz and tourmaline crystals, reactance & capacity meters

Premier Metal Etching, 21-03 44th Ave., Long Island City, N. Y.
Instrument dials & scales; nameplates & panels

Process Controls, Inc., Le Roy, N. Y.
Paper industry controls

Production Instrument Co., 710 W. Jackson Blvd., Chicago, Ill.
Electric & mechanical counting, timing & recording devices & actuating switches

Pyrometer Instrument Co., 103 Lafayette St., New York, N. Y.
Pyrometers for various purposes

R

Racine & Co., Jules, 20 West 47th St., New York, N. Y.
Stop watches

Radio City Products Inc., 88 Park Place, New York, N. Y.
Electrical & radio testing instruments & accessories

Radio Transceiver Labs., 8627 115th St., Richmond Hill, New York
High frequency radio transmitters & receivers

Ranco, Inc., 601 West Fifth Ave., Columbus, Ohio
Refrigeration controls

Randall, Frank E., 248 Ash St., Waltham, Mass.
Machinists' dial gages

Rascher & Betzold, 829-835 Orleans St., Chicago, Ill.
Laboratory supplies

Rawson Electrical Instrument Co., 110 Potter St., Cambridge, Mass.
Dynamometers, wattmeters, milliammeters & voltmeters. Also ultra-sensitive meters both for A.C. & D.C., fluxmeters, electrostatic voltmeters, Thermocouples in vacuum, earth current meters, cable testers, milli-second timers

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Automatic & manually controlled rectifiers for all communication, industrial or laboratory **applications**

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Radio & electronic equipment for all purposes including laboratory & industrial apparatus

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Refinery Supply Co., 621 East Fourth St., Tulsa, Okla.
Gas testing instruments & specialties for oil & gas industry; & laboratory supplies

Refrigerating Specialties Co., 728 So. Sacramento Blvd., Chicago, Ill.
Automatic valves & regulators

Rehtron Corp., 2159 Magnolia Ave., Chicago, Ill.
Photoelectric equipment

Reich Mfg. Co., J. R., 43 East Stroup Road, Dayton, Ohio
Test indicators

Reliance Gauge Column Co., 5902 Carnegie Ave., Cleveland, Ohio
Steam specialties

Reliance Instrument Co., 1135 W. Van Buren St., Chicago, Ill.
Electrical instruments

Remler Company, Ltd., 2101 Bryant St., San Francisco, Calif.
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Republic Flow Meters Co., 2249 Diversey Parkway, Chicago, Ill.
Remote reading flow meters, complete line of power plant & industrial instruments for the measurement of flow, level, pressure, draft, temperature & Co_2. Automatic boiler controls, regulators, valves and desuperheaters

Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, L. I., N. Y.
Protected & unprotected slide-contact rheostats & adjustable, wire wound resistors

Reynolds Gas Regulator Co., Anderson, Ind.
Automatic valves & regulators

Rhamstine, J. Thos., 500 E. Woodbridge St., Detroit, Mich.
Photoelectric cell equipment

Rhodes, Inc., M. H., 30 Bartholomew Ave., Hartford, Conn.
Time switches

Richardson Scale Co., Clifton, N. J.
Automatic weighing machinery

Riehle Testing Machine Division, American Machine & Metals Inc., East Moline, Ill.
Testing machines & testing instruments for tension, compression, bending, torsion, shear, hardness, wear

Rieker Instrument Co., 1919 Fairmount Ave., Philadelphia, Pa.
Scientific instruments

Ring-Balance Instrument Co., 740 N. Franklin St., Chicago, Ill.
Flow meters, draft & pressure gages for low pressure gas & air measurements. Recording, indicating & integrating in any combination

Riverbank Laboratories, Geneva, Ill.
Tuning forks

R & M Mfg. Co., Royal Oak, Mich.
Machine shop gages

Robertson & Co., John H., 1767 W. Armitage Ave., Chicago, Ill.

Robertson, 3rd, J. L., 116 Broad St., New York, N. Y.
Engine indicator accessories

Robertshaw Thermostat Co., Youngwood, Pa.
Thermostats

Robinson Orifice Fitting Co., 1435 Santa Fe Ave., Los Angeles, Calif.
Orifice fittings & plates

Rochester Mfg. Co., Inc., Rochester, N. Y.
Pressure & liquid level indicators & thermometers

Rockwell Co., Stanley P., 296 Homestead Ave., Hartford, Conn.
Dilatometers

Rogear Co., 11 Water St., New York, N. Y.

Roemer Drug Co., 606 N. Broadway, Milwaukee, Wis.
Laboratory supply house

Roller-Smith Co., Bethlehem, Pa.
Instruments (indicating & graphic), air & oil circuit breakers, relays, switchboards, precision balances, transformers, instrument & control switches

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Rowe Radio Research Laboratory Co., 1103 Bryn Mawr Ave., Chicago, Ill.
Specialized industrial & laboratory equipment, Electro-mechanical & electronic devices

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Ruehfel Co., Inc., George, 103-105 Menahan St., Brooklyn, N. Y.
Laboratory instruments & apparatus

Rupp & Bowman Co., 315 Superior St., Toledo, Ohio
Laboratory supplies

Ruska & Co., Inc., Walter, 2332 Bellaire Blvd., Houston, Texas
Geophysical instruments

Ruth Glass Div., Kimble Glass Co., Conshohocken, Pa.
Laboratory glassware

Rutteo Mfg. Co., 103-04 Metropolitan Ave., Forest Hills, N. Y.

S

Sangamo Electric Company, Springfield, Ill.
Electric meters of all types; also instrument transformers, time-switches & radio condensers.

Sarco Company, Inc., 183 Madison Ave., New York, N. Y.
Temperature regulators

Sargent & Co., E. H., 155 E. Superior St., Chicago, Ill.
Laboratory supplies & chemicals

Saxl Instrument Co., Inc., 42 Weybosset St., Providence, R. I.
Precision instruments

Schaar & Co., 754 W. Lexington St., Chicago, Ill.
Laboratory supplies

Schade Valve Mfg. Co., 2527 N. Bodine St., Philadelphia, Pa.
Automatic valves

Schaefer Bros. Co., 1059 W. 11th St., Chicago, Ill.
Rheostats

Schaffer Poidometer Co., 2828 Smallman St., Pittsburgh, Pa.
Scales

Scherr Co., Inc., George, 128 Lafayette St., New York, N. Y.
Optical measuring & inspection equipment

Schettle's Frog Farm, 139 Sawyer Ave., Oshkosh, Wis.

Schutte & Koerting Co., 12th & Thompson Sts., Philadelphia, Pa.
Rotameters

Schwein Engg. Co., L. N., 5736 Washington Blvd., Los Angeles, Calif.
Aircraft instruments & pressure control instruments

Schweitzer & Conrad, Inc., 4435 Ravenswood Ave., Chicago, Ill.
High voltage testers, voltage detectors, & temperature indicators

Scientific Apparatus Co., 4 Landscape Ave., Yonkers, N. Y.
Laboratory apparatus

Scientific Glass Apparatus Co., Bloomfield, N. J.
Glass apparatus & interchangeable ground glass joints

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Current meters

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Scientific Supplies Co., 123 Jackson Ave., Seattle, Wash.
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Analytical balances & weights

Seely Instrument Co., 2249 14th Street, S.W., Akron, Ohio
Temperature, pressure & time cycle controllers, indicating & dial thermometers, diaphragm valves

Selas Co., 18th & Indiana Ave., Philadelphia, Pa.
Indicating flow meters

Selsi Co., Inc., 43 W. 23rd St., New York, N. Y.

Sensitive Research Instrument Corp., 4545 Bronx Blvd., New York, N. Y.
Electrical instruments measuring quantities or values of small current or voltage

Service Recorder Co., 1422 Euclid Ave., Cleveland, Ohio
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Shallcross Controls, Inc., 3707 N. Richards St., Milwaukee, Wisc.
Furnace controls

Shallcross Manufacturing Co., 10 Jackson Ave., Collingdale, Penna.
Rotary Selector Switches with solid silver contacts, accurate instrument resistors 0.1% — 5%, decade resistances & standards, bridges, telephone transmission test sets, resistance thermometers, bonding testers & special instruments for electrical measurements

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Abrasion testers

Sheffield Gage Corp., 15 E. 3 St., Dayton, Ohio
Machine shop gages

Sheldon & Co., E. H., Muskegon, Mich.
Laboratory furniture

Sheldon Electric Corp., 100 Fifth Ave., New York, N. Y.
Photoelectric color matching machines

Shore Instrument & Mfg. Co., Van Wyck & Carll St., Jamaica, N. Y.
Scleroscope hardness testers

Sickles Co., F. W., Springfield, Mass.
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Simmonds Aerocessories, Inc., 10 Rockefeller Plaza, New York, N. Y.
Specialized aeronautical and engineering accessories

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Simplex Valve & Meter Co., 68th & Upland Sts., Philadelphia, Pa.
Flow controls, meters, gages proportioning & ratio control equipment

Simpson Electric Co., 5216 Kinzie St., Austin Station, Chicago, Ill.
Electrical instruments

Sjostrom Co., John E., 1711 N. Tenth St., Philadelphia, Pa.
Laboratory furniture

Slocomb Co., J. T., 35 Oxford St., Providence, R. I.
Micrometer calipers

Sodemann Heat & Power Co., 2300 Delmar Blvd., St. Louis, Mo.
Air conditioned moist cabinet

Sola Electric Co., 2525 Clybourn Ave., Chicago, Ill.
Transformers, automatic voltage adjusters

Soltmann Inc., E. G., 250 East 43rd St., New York, N. Y.
Drawing & engineering materials

Sound Apparatus Co., 150 West 46th St., New York, N. Y.
Sound measuring equipment

Southwestern Electronics Labs., Box 1943 University Sta., Austin, Tex.
Electronic equipment

Southern Desk Co., Hickory, N. C.
Laboratory furniture

Sparling, R. W., 945 N. Main St., Los Angeles, Calif.
Liquid meters

Specialty Glass Co., 536 Lake Shore Drive, Chicago, Ill.
Laboratory glassware

Speedometer Electric Co., 699 Van Ness Ave., San Francisco, Calif.
Survey footmeter

Speidel & Co., Chas. W., 112 N. 12th St., Philadelphia, Pa.
Surveying instruments

Spence Engineering Co., Inc., 53 Grant St., Walden, N. Y.
Regulating valves

Spencer Lens Co., 19 Doat St., Buffalo, N. Y.
Microscopes, still projection equipment, instruments for measuring optical properties, crime detection instruments, & lenses, prisms & reflectors.

Spencer Thermostat Co., 34 Forest St., Attleboro, Mass.
Thermostatic controls, temperature & pressure switches & relief valves, relays-thermal time delay

Sperry Gyroscope Co., Inc., Manhattan Bridge Plaza, Brooklyn, N. Y.
Aircraft & marine navigational instruments

Sperry Products, Inc., 1505 Willow Ave., Hoboken, N. J.
Special railway testers

Sperry-Sun Well Surveying Co., 1608 Walnut St., Philadelphia, Pa.
Underground surveying instruments for oil wells

Sprague Meter Co., 35 South Ave., Bridgeport, Conn.
Liquid meters

Spray Engg. Co., 114 Central St., Somerville, Mass.
Flowmeters

Standard Concrete Apparatus Co., 1422 Rhode Island Ave., Washington, D. C.
Concrete testing equipment

Standard Electrical Products Co., 317 Sibley St., St. Paul, Minn.
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Starrett Co., L. S., Athol, Mass.
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Steel City Testing Laboratory, 8843 Livernois Ave., Detroit, Mich.
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Sterling Engineering Co., 3738 North Holton, Milwaukee, Wisc.
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Stets Company, 141 Milk St., Boston, Mass.
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Stewart-Warner Corp., 1826 Diversey Parkway, Chicago, Ill.
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Suter, Alfred, 200 Fifth Ave., New York, N. Y.
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T

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Thordarson Electric Mfg. Co., 500 W. Huron St., Chicago, Ill.
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Thwing-Albert Instrument Co., Penn St. at Pulaski Ave., Philadelphia, Pa.
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Uehling Instrument Co., 14 Vesper St., Paterson, N. J.
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W

Wadsworth Electric Mfg. Co., Inc., Covington, Ky.
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Weber Bros., Metal Works, 108 N. Jefferson St., Chicago, Ill.
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Weber Co., F., 1220 Buttonwood St., Philadelphia, Pa.
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Welch Scientific Co., W. M., 1515 Sedgwick St., Chicago, Ill.
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West & Dodge Thread Gauge Co., Inc., 6 Power House St., Boston, Mass.
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Western Electro-Mechanical Co. Inc., 300 Broadway, Oakland, Calif.
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Western Instrument Co., 5113 Kinsie St., Los Angeles, Calif.

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Wheelco Instruments Co., 847 W. Harrison St., Chicago, Ill.
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White-Rodgers Electric Co., 1209 Cass Ave., St. Louis, Mo. Furnace controls

Wilcolator Co., 1001 Newark Ave., Newark, N. J.
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Wilder Inc., R. S., 26 Bedford St., Waltham, Mass.
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Wilson Products, Inc., Reading, Penna.
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Wilson Mechanical Instrument Co., Inc., 383 Concord Ave., New York, N. Y.
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Winslow Co., Inc., 9 Liberty St., Newark, N. J.
Electrical instruments

Wollensak Optical Co., 880 Hudson Ave., Rochester, N. Y.
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Wood, Harry W., 4051 Suter St., Oakland, Calif.
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Woods "Lab. Apparatus", F. W., 140-6 Warden St., Pittsburgh, Pa.
Biological laboratory supplies

Woods Hole Oceanographic Inst., Woods Hole, Mass.
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Worthington Gamon Meter Company, Harrison, N. J.
Liquid meters

Wright-Austin Co., 315 West Woodbridge St., Detroit, Mich. Power specialties

Wyland, George C., Center St., Ramsey, N. J.
X-Ray tubes & cameras

X

Xervac Instrument Co., 9 New Park Ave., Hartford, Conn.
Scientific instruments

Y

Yarnall-Waring Company, 102 E. Mermaid Ave., Chestnut Hill, Philadelphia, Pa.
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Yonkers Lab. Supply Co., 515 W. 132 St., New York, N. Y.
Laboratory supplies

Z

Zeiss, Inc., Carl, 485 Fifth Ave., New York, N. Y.
Optical instruments

Zenith Electric Co., 603 So. Dearborn St., Chicago, Ill. Magnetic switches, work cycle timers

Zernickow Co., O., 15 Park Row, New York, N. Y.
Tachometers, Tachographs, Tachoscopes, cutmeters, stop watches

Zip Abrasive Co., Center & Washington Sts., Cleveland, Ohio Tachometers

Zuhr, Inc., Henry, 187 Lafayette St., New York N. Y. Laboratory test instruments

BOOK REVIEWS

(Continued from page 81)

he believed—after "looking everywhere"—to have remained uninvestigated by any American or European laboratory!)

As a text-book, this treatise cannot be compared with any other of its kind, for it is unique. Its arrangement, however, (except for the final chapter) seems to be the result of years of actual experience in lecturing before diversified audiences at association meetings as well as before homogeneous classes of advanced students. Chapter I, of course, traces the analogies between light and electrons; and Chapter II (111 pages) presents a thorough discussion of the electron trajectory—a necessarily thorough discussion, because "the fields of force in which the electron motion takes place are for the most part inhomogeneous" (Preface). Chapter III (143 pages) combines mathematical and practical data on electron lenses. Likewise, Chapter IV not only discusses the classes and characteristics of aberrations but goes into highly practical details of various testing devices and various methods for minimizing or eliminating distortions and other undesirable effects.

The remainder of the book is mostly practical and up-to-late-1938. Chapter V takes up the different types of electron multipliers, Chapter VI treats vacuum technique, Chapter VII deals with electron microscopes and Chapter VIII covers "further applications."

Although the last figure number is "379," so many single numbers appear each under a plurality of diagrams or photographs that there probably are more than five hundred separate illustrations.

There are more than eight hundred references. They are arranged alphabetically by name. We can't resist saying "last but not least" about Dr. Zworykin who gets twenty-two citations. (Only v.Ardenne gets more: 24.) There are more than 1200 listings in the Index.

All in all, this first full-length treatise on a new science has been prepared with the thoroughness and finish of a many-times-revised classic. This book now *makes* electron optics a distinct science.

—M. F. Behar

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MANUFACTURERS' NEW LITERATURE

In this department we report ALL pieces of NEW literature pertaining to Instrumentation, received from the manufacturers. To assist in the War Effort we urge readers to request only those bulletins which will be of value to them.

J-1 **"Claud S. Gordon Company."** Booklet, 6" × 9", 8 pages, gives history of the company and describes its facilities. Claud S. Gordon Co., 1524 So. Western Ave., Chicago, Ill.

J-2 **Electronic Control System.** Booklet GEA-972A, 5¼" × 7¾", 8 pages, describes and illustrates new "Thy-motrol" electronic control system for the operation of d-c. motors from a-c. lines; provides stepless, wide-range speed control and the additional functions of starting, accelerating, protecting and stopping d-c. motors. General Electric Co., Schenectady, N. Y.

J-3 **Indicating Instruments.** Condensed Catalog No. C-10, 8 pages, describes and illustrates line of U-type and well-type manometers, draft gages, flowmeters, mercury pressure gages, tank gages and all accessories for measuring pressures, vacuums and flows of liquids and gases; contains size ranges, dimensions, weights and list prices. The Meriam Co., 1955 West 112th St., Cleveland, Ohio.

J-4 **Thermoswitches.** Folder containing Catalog Sections, each 2 pages, 8½" × 11", covers cartridge, air, hex head, immersion, block head, flange head, submersion, all-purpose and limited range 25-ampere capacity types of thermoswitches. Fenwal, Inc., Ashland, Mass.

J-5 **"General Radio Experimenter."** Nov. & Dec. 1941 issues, 4 and 8 pages respectively, contain Parts V and VI of "Impedance Bridges Assembled from Laboratory Parts," also articles on redesign of vacuum tube bridge and using cathode-ray oscillograph in frequency comparisons. General Radio Co., 30 State St., Cambridge, Mass.

J-6 **Recording Viscosimeter.** Sheet, 8½" × 10¾", 1 page, describes and illustrates instrument for paints, pigments, varnishes, printing ink, adhesives, oils and greases, chocolate, ice cream, starch and any viscous material from a little above water to as heavy as paint pigment. Brabender Corp., Rochelle Park, N. J.

J-7 **Microphotometer.** Catalog E-90(1), 7¾" × 10½", 12 pages, describes and illustrates the Knorr-Albers microphotometer which mechanically scans spectrographic plates or films and which, by means of a "Speedomax" recorder, automatically records on a wide-strip chart the relative positions and densities of spectrum lines. Leeds & Northrup Co., 4934 Stenton Ave., Philadelphia, Pa.

J-8 **Resistance Thermometers.** Catalog No. 9004, 7½" × 10½", 32 pages, covers thermometers for measuring and controlling relatively low temperatures in industrial processes, scientific work, refrigeration, air conditioning, etc. Illustrations of various types of resistance thermometers, control accessories, moisture-proof rotary switches, etc., are included. Brown Instrument Co., Wayne & Roberts Aves., Philadelphia, Pa.

J-9 **"The Ohmite News."** Dec. 1941 issue, 2 pages, describes application of manufacturer's rheostats at a New York City radio transmitting station; contains item listing various types and sizes of resistors for industrial radio and electronic requirements. Ohmite Mfg. Co., 4835-41 Flournoy St., Chicago, Ill.

J-10 **Temperature, Indicating, Recording and Control Instruments.** Bulletin No. Z5000, 8½" × 11", 12 pages, covers line of remote controllers and auxiliaries, temperature control instruments, portable potentiometers, radiation heads, thermocouples and lead wire and "Flame-Otrols" and auxiliaries. Wheelco Instruments Co., Harrison & Peoria Sts., Chicago, Ill.

J-11 **"Permopivots" of "Permometal" for Precision Instruments.** Bulletin, 5⅜" × 8½", 4 pages, describes Permopivots for precision instruments, specially tipped with permometal, a platinum metals alloy (osium, ruthenium, etc.) said to be non-corroding, non-abrasive, wear resistant, non-magnetic and eliminates need of oil for lubrication. Permo Products Corp., 6415 North Ravenswood Ave., Chicago, Ill.

J-12 **Industrial Cleaning Machines and Cleaning and Rinsing Solutions.** Booklet, 5½" × 8½", 4 pages, describes and illustrates machine for precision cleaning of vital industrial units — instruments, meters, gages, bearings, clocks, etc., also lists cleaning and rinsing solutions. L & R Manufacturing Co., 54 Clinton St., Newark, N. J.

J-13 **Time Switches, Flashers and Interval Timers.** Form No. 33927, 3⅝" × 8¾", 6 pages, describes and illustrates line of time switches; on-and-off, alternates, four-in-one and other flasher types; and a number of types of interval timers—manual reset, automatic reset, adjustable cycle, program or signal timers, etc. Automatic Electric Mfg. Co., Mankato, Minn.

J-14 **Scientific Instruments and Photographic Materials.** Catalog 30, 8¼" × 11", 44 pages, covers line of instruments for spectroscopy, ultra violet ray fluorescence effects, special laboratory equipment and photographic supplies. Laboratory Specialties, Inc., 144 S. Wabash St., Wabash, Ind.

J-15 **Thermometers and Hydrometers.** Catalog No. 103, 8½" × 11", 48 pages, covers line of thermometers, hygrometers, barometers and hydrometers—red reading mercury, yellow back and red bore back types—for all industrial, technical and laboratory purposes. Philadelphia Thermometer Co., 915 Filbert St., Philadelphia, Pa.

J-16 **High Vacuum Pumps.** Catalog No. 38-P, 8½" × 11", 28 pages, covers the various models of high vacuum pumps giving structural features, operating principles, specifications and dimensions, charts and other information on vacuum and typical installations. F. J. Stokes Machine Co., Tabor Road, Olney P. O., Philadelphia, Pa.

J-17 **Dew Point Tester for Gases Under Pressure.** Folder, 4" × 8¼", describes and illustrates Bureau of Mines type for use in connection with the high pressure gas transmission lines — dew points can be measured with an accuracy of 0.2°F. The Refinery Supply Co., 621 East Fourth St., Tulsa, Okla.

J-18 **Testing Machines.** Booklet, 6" × 9", 20 pages, describes and illustrates hand- and power-operated Brinell hardness testers, Brinell microscope models with illuminator or with counter, indicator for direct-reading of tests, leveling table, calibrator for testing accuracy of hardness testers, metallographic grinder with ball bearings and sheet metal tester. Pittsburgh Instrument & Machine Co., 1026 Reedsdale St., Pittsburgh, Pa.

J-19 **Smoke Indicators.** Bulletin 413, 9½" × 11¾", 4 pages, describes and illustrates super sensitive visual type smoke indicators for guarding against objectionable smoke and indication of proper combustion hazes; and automatic combustion control with the Hazegage combustion indicator. Ess Instrument Co., 30 Irving Pl., New York City.

J-20 **Liquid Level Control.** Bulletin 412, 8½" × 11", 4 pages, describes and illustrates Faratron electronic control — no floats, no moving parts, non-mechanical —an electronic switch for controlling level of water, syrup, oil, milk, etc. in any type of container open or closed. Lumenite Electric Co., 407 South Dearborn St., Chicago, Ill.

J-21 **Engineering Data Covering Resistors and Controls.** Loose-leaf Binder, 9" × 11½", 44 pages, contains data sheets on resistors, controls and resistance devices for the radio, television, electronic, electrical and aeronautical industries. Clarostat Mfg. Co., Inc., 285 North 6th St., Brooklyn, N. Y.

J-22 **Low Power Photomicrography.** Catalog F-19, 8½" × 11", 4 pages, describes and illustrates micro tessars and tessar IIb lenses designed for low power photomicrography. Price list attached. Bausch & Lomb Optical Co., 615 St. Paul St., Rochester, N. Y.

J-23 **Gages and Dial Indicators.** Catalog No. 52, 8½" × 11", 40 pages, describes and illustrates a number of dial indicator models, dial micrometers, thickness measures, upright gages and cylinder gages. B. C. Ames Co., Waltham, Mass.

J-24 **Production Counter.** Catalog Section No. 16, 8½" × 11", 2 pages, describes and illustrates new magnetic counter operated by photocell and a beam projector. The interruption of the light beam by an object actuates the electric counter. Durant Mfg. Co., 1929 North Buffum St., Milwaukee, Wis.

J-25 **Panel Instruments.** Catalog A, 8½" × 11", 12 pages, covers line of electrical instruments of the d-c. D'Arsonval moving coil, a-c. double iron repulsion and electro-dynamometer types; also several precision portables. The Triplett Electrical Instrument Co., Bluffton, Ohio.

J-26 **Aircraft Instruments.** Booklet, 5¼" × 7", 50 pages, covers altimeters, air speed indicators, Pitot static tubes, aviation clocks, direction indicators, aviation compasses, free air thermometer, vertical speed indicator, engine and miscellaneous instruments. Kollsman Instrument Div., Square D Co., 80-08—45th Ave., Elmhurst, N. Y.

J-27 **Rotary Selector Switches.** Bulletin, 8½" × 11", 4 pages, covers thermocouple and resistance thermometer switches, also special thermocouple switches. Includes drilling dimensions for mounting switches flush on panels. Lewis Engineering Co., Naugatuck, Conn.

J-28 **Insulation Resistance Testing Instruments.** Bulletin No. 430, 8¼" × 10¾", 8 pages, describes model B-5 Megohmer with range of 0-200 megohms for insulation tests, 0-2000 ohms for low resistance measurements and has two d-c. voltmeter scales 0-300 and 0-600 volts. Herman H. Sticht Co., Inc., 27 Park Pl., New York City.

J-29 **Rotary Instrument Switches.** Bulletin SW, 8½" × 11", 1 page, covers Types "EN" and "BS" switches for instrument and industrial field; gives applications, construction data and general specifications. J-B-L Instrument Co., P. O. Box 135, Darby, Pa.

J-30 **Dynamic Hardness Tester.** Bulletin, 8½" × 11", 4 pages, describes and illustrates Model No. 7 hardness tester for metals, plastics and industrial materials. Instrument is 4½" × 4½" × 11¼"; weighs 13 oz. and is furnished in a leather covered case. The R. Y. Ferner Co., 131 State St., Boston, Mass.

J-31 **Pressure and Temperature Recorders.** Bulletin No. 111, 7¾" × 10½", 24 pages, describes Type K35 recorders including a table of the different types of measuring elements. A number of typical installations are illustrated in various industries. Bailey Meter Co., 1050 Ivanhoe Rd., Cleveland, Ohio.

J-32 **Electron Microscope.** Bulletin, 8⅝" × 11⅝", 24 pages, covers electron microscope with magnifications up to 100,000 diameters, describes its operation and shows fields in which it may be applied. RCA Manufacturing Co., Inc., Camden, N. J.

J-33 **Projection Reading Analytical Balance.** Bulletin No. 680, 3¾" × 8⅝", 4 pages, describes and illustrates analytical balance No. 911 for automatic weighings from 1/10 mg. to 100 mg. ±. Illuminated and graduated micro scale is magnified, projected and read on a matt glass screen. Christian Becker, Inc., 92 Reade St., New York City.

J-34 **Midget Magnetic Relays.** Bulletin 106, 8" × 10½", 2 pages, covers relays for use on a-c. or d-c. and can be equipped with single- or double-pole and single- or double-throw contacts. Standard relays are of the open type mounted on a molded insulating base. Ward Leonard Electric Co., 38 South St., Mount Vernon, N. Y.

J-35 **Portable Hardness Tester.** Circular F 1689, 3¾" × 8½", 4 pages, describes and illustrates the "Impressor" for testing hardness of metals or plastics after fabrication—aluminum, aluminum alloys and soft metals. Barber-Colman Co., Rockford, Ill.

J-36 **Tachometer and Vibration Indicator.** Bulletin 1700, 7¾" × 10½", 4 pages, describes and illustrates "Frahm" tachometer for speed measurement and rates of vibration. Also lists mechanical indicating tachometer, chronometric speed indicator, tachoscope and stroboscope. James G. Biddle Co., 1211-13 Arch St., Philadelphia, Pa.

J-37 **Radio Laboratory Instruments.** Booklet, 6" × 9", 16 pages, describes and illustrates signal generators, calibrator, microvolters and accessories — external modulation coupling unit and audio oscillator, radio noise and field strength meter and crystal controlled generator. Ferris Instrument Corp., Boonton, N. J.

J-38 **Automatic Furnace Draft Control for On and Off Firing Equipment.** Publication No. 41-489, 8½" × 11", 8 pages, covers construction, operation and applications of Type CSESS automatic sequence furnace draft controller. The Hays Corp., Michigan City, Ind.

J-39 **Steam Heating Control.** Folder, 8½" × 11" 6 pages, describes and illustrates pneumatic "Duo-Stat" weather-compensated heat regulator for all types of automatic firing devices. Johnson Service Co., 1355 Washington Blvd., Chicago, Ill.

J-40 **Salt Spray Corrosion Test Equipment.** Bulletin, 8½" × 11", 2 pages, describes and illustrates equipment designed to determine the corrosion resisting qualities of electroplated or coated metal, alloys, metal parts, lacquered or painted samples, etc. Industrial Filter & Pump Co., 3017 West Carroll Ave., Chicago, Ill.

J-41 **Galvanometers for Seismic Recorders.** Folder SG-1, 8½" × 11", 6 pages, describes and illustrates coil galvanometers and 12 channel camera for coil type and oscillograph galvanometers for 6 element cameras. Heiland Research Corp., 700 Club Building, Denver, Colo.

J-42 **Moisture Control System.** Bulletin 212-2, 8½" × 11", 16 pages, describes and illustrates "Verigraph" system which measures and controls the equilibrium moisture content of the paper web during manufacture. The Foxboro Co., 46 Neponset Ave., Foxboro, Mass.

J-43 **Dosage Meter.** Circular "F", 8½" × 11", 2 pages, covers safety device for protection of workers using radium and radium luminous material, indicating gamma-ray intensity and locating lost or misplaced radium. Geophysical Instrument Co., 1315 Half St., S. E., Washington, D. C.

J-44 **Flowmeters** Publication 3010, 8½" × 11", 52 pages, covers instrument application to steam, water, air, gas and viscous, volatile and corrosive fluid measurement. Special sections are devoted to control applications, dual range recorders, detached instruments and summation meters. A list of available charts is included. Cochrane Corp., 17th St. & Allegheny Ave., Philadelphia, Pa.

J-45 **Rheostats and Potentiometers.** Catalog R-61, 8½" × 11", 4 pages, covers heavy duty rheostats and potentiometers for spot welding, mixing panels, motor control, electronic devices, radio transmitters, dynamic voltage control, portable power amplifiers, primary power circuits, electroplating and laboratory work. DeJur-Amsco Corp., Shelton, Conn.

J-46 **Scientific Laboratory Apparatus.** Catalog 341, 8" × 11", 1216 pages, covers entire line of chemical, metallurgical, physical, clinical, biological and bacteriological apparatus. All requests for this catalog should be directed to manufacturer on company letterhead. Burrell Technical Supply Co., 1935 Fifth Ave., Pittsburgh, Pa.

J-47 **Heat Controls.** Bulletin, 8½" × 11", 4 pages, describes and illustrates models of controllers for temperatures as low as —100° or as high as 1400°F., gives diagram of installations, mounting equipment and comparative temperature chart. Burling Instrument Co., 253 Springfield Ave., Newark, N. J.

J-48 **Portable Humidity Recorders.** Bulletin 554a, 8" × 10½", 6 pages, describes and illustrates Models 4069TH without fan — natural circulation and F4069TH "Thermo-Humidigraph" with fan. Instruments record in colored ink on circular charts the per cent relative humidity of the atmosphere surrounding them. The Bristol Co., Waterbury, Conn.

J-49 **Polarizing Microscopes.** Catalog, 7" × 10", 26 pages, describes and illustrates microscopes for use in the sciences and industries — medical, ceramics, mining, petroleum, textile and paper industries and industrial hygiene, botanical, and food and drugs. Spencer Lens Co., 19 Doat St., Buffalo, N. Y.

J-50 **Constant Voltage Transformers.** Bulletin CV-74, 8½" × 11", 22 pages, describes and illustrates transformers which deliver a constant output voltage, independent of transient or continuous variations in supply voltage. Covers construction, operation and applications of transformers. Sola Electric Co., 2525 Clybourn Ave., Chicago, Ill.

J-51 **Precision Balances.** Catalog 4540, 8½" × 11", 8 pages, describes and illustrates Models B, C and D balances for determination of the weight of small objects or materials where a number of weighings of approximately the same value must be made, and surface tension balance designed for measuring the surface tension of liquids. Roller-Smith Co., 1766 Market St., Bethlehem, Pa.

J-52 **Liquid Measurement.** Bulletin, 8½" × 11" 8 pages, discusses measurement with the King-Gage, formerly K-S Telegage, an instrument to determine the liquid level, or liquid content, of any type of tank, vat or container. King Engineering Corp., Ann Arbor, Mich.

J-53 **Electronic Micrometer.** Bulletin, 8½" × 11", 4 pages, describes and illustrates Carson electronic micrometer for precision measurements without pressure on soft, flexible, or compressible materials—measures thickness to 0.0001" on rubber, fabric, cork, foil, felt, fiber, plastics, paint films or paper. Instrument Specialties Co., Inc., Little Falls, N. J.

J-54 **Metal Shielded Wire.** Folder, 8½ × 11", 4 pages, describes and illustrates wire which provides new method of shielding insulated wire or wires with seamless aluminum or copper tubing. Can be made in different combinations from a single conductor with an outside diameter of .018" to multi-cable types up to 1" outside diameter. Precision Tube Co., 3824-26-28 Terrace St., Philadelphia, Pa.

J-55 **Scientific Apparatus — Physical, Chemical and Biological.** Catalog, 7¾" × 10½", 652 pages. This is the 1942 Welch catalog which is divided into fourteen main sections as follows: measurements, mechanics of fluids, heat, magnetism and static electricity, current electricity, sound and light, balances and weights, chemical apparatus, chemicals, biological apparatus and supplies, charts and models, microscopes, specimens living and preserved and prepared microscopic slides. Sent without charge to all who have an educational, research, or industrial laboratory connection. ("We obviously cannot afford to distribute a comprehensive catalog of this kind to students who might see our catalog on an instructor's desk, etc.") W. M. Welch Mfg. Co., 1515 Sedgwick St., Chicago, Ill.

J-56 **Automatic Control Equipment.** Catalog No. 41, 8⅜" × 11", 24 pages, describes and illustrates control equipment for temperature, rate of flow, pressure and liquid level. Mason-Neilan Regulator Co., 1185 Adams St., Boston, Mass.

J-57 **Recording Instruments for Temperature and Pressure.** Catalog No. 1210, 8½" × 11", 26 pages, covers line of mercury-actuated, vapor tension and gas-filled recording thermometers; also hygrometers, time-operation recorders, psychrometer and pressure and vacuum recording gages. C. J. Tagliabue Mfg. Co., Park & Nostrand Aves., Brooklyn, N. Y.

J-58 **Valves for Refinery Operations.** Catalog, 104 pages, plastic bound, presents 98 "Nordco" steel valves and 121 semi-steel valves, includes standard types, hypreseals, steam jacketed, multiports and flexible coupling adaptations with wrench, worm or spur gear operation. Air, meter and service cocks are also listed and a newly revised table of "Nordco" lubricants. Merco Nordstrom Valve Co., 400 Lexington Ave., Pittsburgh, Pa.

J-59 **"The Hydromike."** Vol. 4, No. 4, 8½" × 11", contains items on level and flow controls and on the Stevens simplified Venturi tube. Leupold, Volpel & Co., 425 N. E. 70th Ave., Portland, Oregon.

J-60 **Liquid Level Measurement.** Bulletin, 8½" × 11", 8 pages, describes and illustrates liquid level gage — showing the indicator panel, junction box, control mechanism, pulley compartment and tank head gaging unit, which houses the control mechanism and pulley. Guardian Elec. Mfg. Co., 1627 West Walnut St., Chicago, Ill.

J-61 **Ground Resistance Tester.** Bulletin 251, 8½" × 11", 4 pages, describes and illustrates new "Model 251 Vibroground" designed for testing resistance to earth of ground rods and is of the synchronous self-rectifying type. Associated Research, Inc., 431 So. Dearborn St., Chicago, Ill.

J-62 **Time Control of Reversal.** Bulletin T-31, 8½" × 11", 2 pages, describes and illustrates firing-reversal timers for use in controlling the firing of regenerative furnaces, typical applications covered are in the steel and glass industries. Automatic Temperature Control Co., 34 E. Logan St., Philadelphia, Pa.

J-63 **Universal Hydraulic Testing Machines.** Bulletin, 8½" × 11", 4 pages, covers Model 505 testing machines up to 60,000 lbs. capacity, for compression, tension and transverse testing. Riehle Testing Machine Div. of American Machine & Metals, Inc., East Moline, Ill.

J-64 **Instrument Panelboards.** Bulletin 8¼" × 10¾", 4 pages, describes and illustrates line of instrument panels—self-supporting cubicle-type, flat plate panel with structural supports, standard unit panel with stock supports and braces, special type draft gage board, etc. Falstrom Co., Passaic, N. J.

J-65 **"Electroencephalograph."** Bulletin, 5" × 8½", 6 pages, announces new Junior "Electroencephalograph" apparatus for the recording of electrical potentials originating in the brain. Electro-Medical Laboratory, Inc., Holliston, Mass.

J-66 **Cathode-ray Oscillograph.** Bulletin, 6" × 9", 8 pages, describes and illustrates Type 208 oscillograph with distortionless input-attenuator, newly developed amplifier circuit among its features. Allen B. DuMont Labs., Inc., 2 Main Ave., Passaic, N. J.

J-67 **Plaster Tester.** Bulletin, 8½" × 11", 2 pages, describes and illustrates "Kaydel" plaster tester for determination of moisture. Instrument dimensions 2⅞" × 1¾" × 5½"; weight 20 oz., extension contactor with 4½ ft. cable is available as accessory. Hart Moisture Gauges, 126 Liberty St., New York City.

J-68 **"Hydron Metallic Bellows."** Catalog, 8½" × 11", 44 pages, describes and illustrates Hydron bellows — includes tables of sizes and characteristics of standard and extra flexible bellows and a life prediction chart, discusses assembling, soldering and cleaning, application of Hydron bellows assemblies for remote control of temperatures; section on instructions for ordering thermostatic units and a large chart of vapor pressure—temperature curves of typical filling mediums. Clifford Mfg. Co., 564 East First St., Boston, Mass.

J-69 **Metal Bellows and Bellows Assemblies.** Bulletin No. 130, 8½" × 11", 28 pages, catalogues seamless metal bellows and assemblies for use by instrument, appliance and machinery manufacturers, covers applications of seamless metal bellows, both roll-formed and hydraulically-formed in single and multi-ply types. The Fulton Sylphon Co., Knoxville, Tenn.

J-70 **"Cornell-Dubilier Capacitor."** Vol. 5, No. 9, 16 pages, contains article entitled "A Flexible Plug-In Tester," also a number of items on radio service hints. Cornell-Dubilier Electric Corp., New Bedford, Mass.

J-71 **Variable Transformer.** Bulletin No. 149, 8½" × 11", 12 pages, describes and illustrates Powerstat auto-transformer for obtaining continuously variable output voltage from a-c. power lines, also covers various applications. Superior Electric Co., 130 Harrison St., Bristol, Conn.

J-72 **Automatic Solution Control.** Bulletin, 8½" × 11", 2 pages, covers Type RE Solu-Bridge controller which indicates concentration of a solution in percentage, parts per million or other terms, operates a visual or audible warning, or controls a valve or other corrective means when concentration exceeds or falls below set limit. Industrial Instruments, 156 Culver Ave., Jersey City, N. J.

J-73 **Rotameters.** Catalog Section 50-A, 8½" × 11", 8 pages, covers electrically operated, remote indicating, recording and integrating Rotameters. Several different types of transmitting systems including mechanical, magnetic, electronic and inductive are used, with this catalog section being devoted to induction bridge transmitter types. Fischer & Porter Co., 24 County Line Rd., Hatboro, Pa.

J-74 **Industrial Analyzer.** Sheet, 8¾" × 11¼", 1 page, covers Model 77 a-c. power analyzer for complete power tests—3 phase, 2 phase and single phase. Measures values from ⅛ amp. to 300; watts from 15 to 240,000; voltages of circuits nominally 110-220-440-550. Niagara Electrical Instrument Co., 1 West Genesee St., Buffalo, N. Y.

J-75 **Relays and Control Apparatus.** Catalog CC-1, 9" × 11", 14 pages, covers line of d-c. relays, electric counters, contact assemblies, mercury contact relays, keys, plugs, jacks, terminal blocks and pilot switches; supplement sheets on Type G micro switch relay and lever keys. C. P. Clare & Co., Lawrence & Lamon Aves., Chicago, Ill.

J-76 **Dissolved Oxygen Recorder.** 3 sheets, 8½" × 11", describes and illustrates oxygen recorder with 10" strip chart, chart speed of 1" per hour. Standard ranges of the instrument are 0-1 p.p.m. dissolved oxygen or 0-2 cc. per liter. Schematic diagram included. Cambridge Instrument Co., Inc., Grand Central Terminal, New York City.

J-77 **Condensers, Resistors and Test Instruments.** Catalog, 8½" × 11", 20 pages, covers general line of electrolytic, paper, oil, exact-duplicate replacements, transmitting and other condensers, wire-wound and carbon resistors, and L-C checker, capacity-resistance bridge and motor-starting capacitor selector. Aerovox Corp., New Bedford, Mass.

J-78 **Aircraft Compass.** Bulletin, 8½" × 11", 2 pages, describes and illustrates Type CG compass, mounting dimensions conform to AN and SAE standards for 2¾" dial instruments, spherical bowl is of phenolic composition (a hot molded plastic), front glass of magnifying type. Elgin National Watch Co., Precision Products Div., Elgin, Ill.

J-79 **Portable Electrical Instruments.** Bulletin P-10-1, 8⅜" × 10¾", 8 pages, covers d-c. Model P-11 permanent magnet moving coil type voltmeters, millivoltmeters, microammeters, milliammeters, ammeters and volt-ammeters; a-c. Model P-12 moveable iron type, a-c. Model P-13 rectifier type and a-c. Model P-14 thermocouple type; portable testing shunts and electric tachometers. The Winslow Co., Newark, N. J.

J-80 **"The Technique of Square Wave Analysis."** Bulletin, 8½" × 11", 4 pages, discusses square wave analysis and describes and illustrates Model 71 square wave generator; price included. Measurements Corp., Boonton, N. J.

J-81 **Time Delay Relay.** Bulletin N-4, 8½" × 11", 8 pages, describes and illustrates the "Agastat" for introducing a time delay in electrical circuits, designed for use in conjunction with any electrical apparatus requiring a delay interval; gives contact arrangements, mountings and applications. American Gas Accumulator Co., Elizabeth, N. J.

J-82 **Mercury Plunger Relays.** Bulletin "B", 8½" × 11", 4 pages, covers relays designed to operate in any position within 45° of the vertical; among features are one moving part, mercury to mercury break, up to 30 ampere or one h.p. a.c. rating. H-B Electric Co., Inc., 2518 North Broad St., Philadelphia, Pa.

J-83 **Rheostats.** Bulletin S, 8¼" × 10½", 6 pages, describes and illustrates line of rheostats including tubular slide-contact, four-range, rotary drive, table rotary drive, vertically mounted and motorized types and adjustable resistors. Rex Rheostat Co., 3 Foxhurst Rd., Baldwin, L. I., N. Y.

J-84 **Centrifugal Tachometers.** Bulletin, 8½" × 10¾", 4 pages, describes and illustrates single-range hand, stationary and triple-range types of tachometers, includes prices. Boulin Instrument Co., 65 Madison Ave., New York City.

J-85 **Torque Testing Machine.** Bulletin TM 1, 8½" × 11", 5 pages, describes Torquemeter, instruments and auxiliary equipment for the determination of torsional or frictional resistances in bolts, crankshafts, twist drills, bearing surfaces and other equipment. Waugh Laboratories, 420 Lexington Ave., New York City.

J-86 **Air Meters.** Bulletin A-7, 8½" × 10¾", 4 pages, describes and illustrates compressed air meter for measuring the air consumption of any pneumatic tool, rock drill, air motor, sand blast, air lift or other application of compressed air. New Jersey Meter Co., Plainfield, N. J.

J-87 **Ceramic Cut-Off Saw, Optical Glass Spindle and Automatic Polishing Spindle.** Three bulletins, 8½" × 11", 1 page each, show cut-off saw for ceramics, synthetics or metals, multi-spindle hand correcting machine and polishing machine for optical glass. Baily Vibrator Co., 1539 Wood St., Philadelphia, Pa.

J-88 **Precision Timers.** Bulletin No. 113, 3½" × 6", 16 pages, covers electric precision timers for measuring and indicating elapsed-time intervals, also chrono-tachometer for testing engine performance by integrating revolutions and time. Standard Electric Time Co., Springfield, Mass.

J-89 **Instrument Cases.** Circular, 12" × 6¼", 2 pages, describes and illustrates leather and hardwood finished cases for precision tools and instruments—gages, indicators, micrometers, vernier calipers, optical instruments, drawing instruments, surgical instruments, etc. Rueckert Mfg. Co., 69 Sprague St., Providence, R. I.

J-90 **Hand and Stationary Tachometers.** Two Bulletins, 8½" × 11" 10 pages combined, describes and illustrates multiple-range hand tachometer in carrying case—Type B Class A, and stationary industrial type with various types of mountings shown. Jones-Motrola Sales Co., 432 Fairfield Ave., Stamford, Conn.

J-91 **Indicating Calipers.** Folder, 8½" × 11", 4 pages, describes and illustrates two-inch and three-inch indicating calipers—the two-inch calipers are graduated in 1/1000 inches; three-inch calipers in 1/64 inches. Metric system types are covered, also special calipers. Indicating Calipers Corp., 506 East 19th St., New York City.

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Instruments Publishing Co., Pittsburgh (Jan. 1942)

Please have the following catalogues, etc., reviewed in this issue sent to me.

Numbers .....

I also desire further information concerning the following new products described in this month's "New Instruments" Department .....

.....

I also desire further information concerning the following products advertised in this issue (Write page number and name of company) .....

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Name .....

Company ..... Position .....

Co.'s Address .....

(OR) Home Address .....

J-92 **Optical Pyrometers.** Catalog No. 80, 8½" × 11", 6 pages, covers characteristics and applications of "Pyro" optical pyrometer. Pyrometer Instrument Co., 103 Lafayette St., New York City.

J-93 **Electric Detector for Tubes.** Bulletin 91, 8½" × 11", 4 pages, describes and illustrates detector for ferrous and non-ferrous metals—Type B-1-B for low sensitivity and C-1-A for high sensitivity; a number of illustrations show types of defects detected. Sperry Products, Inc., 1505 Willow Ave., Hoboken, N. J.

J-94 **Recording Sound Frequency Analyzer.** Bulletin, 8½" × 11", 6 pages, describes and illustrates RA-281 analyzer consisting of three units—a sound frequency analyzer, special graphic level recorder and either a moving coil microphone or moving coil vibration pick-up. Equipment is portable—intended for field testing as well as laboratory use. Electrical Research Products, 76 Varick St., New York City.

J-95 **Pyrheliometer.** Bulletin No. 2, 8½" × 11", 6 pages, discusses instruments primarily designed for the measurement of the intensity of solar radiation falling upon a horizontal plane. Graphic records are shown of Nos. 294 and 263 (weather bureau types) pyrheliometers used in conjunction with a recorder. Prices included. The Eppley Laboratory, Inc., Newport, R. I.

J-96 **Temperature Gages.** Catalog T-11-C, 8½" × 11", 12 pages, covers line of industrial temperature gages, testing thermometers, general-purpose angle form and heavy duty angle form and straight form temperature gages; also accessories for gages. Weston Electrical Instrument Corp., 591 Frelinghuysen Ave., Newark, N. J.

J-97 **Miniature Ball Bearings.** Bulletin No. 4, 8½" × 11", 6 pages, shows R.M.B. bearings available in sizes ranging from 1.5 millimeters up to 20 millimeters outside diameter. Designed for small motors, recorders, clock-work mechanisms, weighing devices, speed indicators, pressure gages and other precise apparatus. Price list and discount sheet included. Landis & Gyr, Inc., 104 Fifth Ave., New York City.

J-98 **Galvanometers.** Bulletin No. 320, 8½" × 11", 12 pages, describes and illustrates Type T high sensitivity, Type W wall, d.c. spotlight, a.c. spotlight, a.c. pointer, d.c. pointer and the new Type L and "Pointerlite" galvanometers; also new Ayrton shunts and accessories. Rubicon Co., Ridge Ave. at 35th St., Philadelphia, Pa.

J-102 **Temperature Instruments.** Catalog No. 42, 8⅝" × 11¼", 14 pages, describes and illustrates 6" square case dial, 6", 5", 4½" and 3½" dial thermometers, 6", 10" and 12" recording thermometers, straight form and angle form brass case types, kettle, tank and iron case and cylinder case thermometers. Gotham Instrument Co., 149 Wooster St., New York City.

J-99 **Electrical Instruments.** Catalog No. 22, 8⅜" × 11", 26 pages, describes and illustrates line of standard laboratory, portable and panel mounting instruments — a.c.-d.c. milliameters, voltmeters, ammeters, wattmeters, etc.—and new volt - ampere - wattmeter, electrical appliance tester and circuit analyzer; also external shunts and current transformers for panel mounting instruments. A number of aircraft electrical indicating instruments are shown. Hickok Electrical Instrument Co., 10514 Dupont Ave., Cleveland, Ohio.

J-100 **Vacuum Thermocouple.** Bulletin, 8½" × 11", 4 pages, describes and illustrates thermocouple consisting of a thermo-junction and a heater-filament mounted in an evacuated glass bulb; applications include use in electrical communication: the telephone and radio, electro-medical industry in x-ray, diathermy and therapeutic equipment and commercial and educational electrical research work. American Electrical Sales Co., Inc., 67 East 8th St., New York City.

J-101 **Fractional Horsepower Motors.** Bulletins 1023 and 1024, 8" × 10½", each 4 pages, describes and illustrates Type K frame motor, only 2⅜" high, and built-in spur gear speed reducer motors — synchronous or non-synchronous, speeds from 300 r.p.m. to 1 r.p.m., torque 1.3 to 120 inch ounces, especially designed for use on instruments and control apparatus. Bodine Electric Co., 2254 West Ohio St., Chicago, Ill.

J-103 **Instruments and Controls.** Catalog No. 41-1, 8½" × 11", 12 pages, covers complete line of equipment including control systems, CO_2 meters, desuperheaters, draft instruments, flowmeters, liquid level instruments, multiple reading indicators and recorders, master panelboards, pressure instruments, regulators, thermometers and pressure reducing and regulating valves. Republic Flow Meters Co., 2240 Diversey Parkway, Chicago, Ill.

J-104 **Surface Analyzer.** Technical Bulletin No. 552, 8½" × 11", 11 sheets, describes and illustrates SA-2 surface analyzer designed for making instantaneous and permanent chart records of irregularities in finished surfaces such as metals, glass, plastics, plated and painted surfaces, paper, etc. Irregularities of less than one microinch (1,000,000th of an inch) may be accurately recorded. The Brush Development Co., 3311 Perkins Ave., Cleveland, Ohio.

J-105 **Resistors, Attenuators and Measuring Equipment.** Catalog, 8¾" × 11", 70 pages, covers line of broadcast, sound picture, television and electrical apparatus components and laboratory test equipment including output power meters, volume level indicators, power level indicators, decade voltage divider, logarithmic resistor and program line equalizer. The Daven Co., 158 Summit St., Newark, N. J.

J-106 **Flight Analyzers.** Descriptive and instruction sheets, cover the Nos. 640, 643 and 644 analyzers—640 especially designed to chart altitude of aircraft during flight in terms of barometric pressure, and electrically actuated operations pens record the time during which any particular equipment is used; No. 643 analyzer records air speed, vertical acceleration, altitude and two operations and 644 makes records of information given on the Autosyn system. Julien P. Friez & Sons, Baltimore St. & Central Ave., Baltimore, Md.

J-107 **Meters for All Liquids.** Booklet, 8¼" × 11", 16 pages, describes and illustrates meters for oils, gasoline, water and chemicals—and high pressure, electri-contact, molasses, beer and wine, paint, grease, and other meters; also vertical and horizontal meter dials, trap strainers and air release valves. Gives data on capacities, care of meters, dimensions and installation. Buffalo Meter Co., 2917 Main St., Buffalo, N. Y.

J-108 **Enclosing Cabinets for Electrical Devices.** Catalog No. 22, 8¾" × 11¼", 22 pages, covers line of Type "A" surface and special cabinets, screw cover pull boxes, weatherproof cabinets, slant roof, Type "P" flush, guttered type and panelboard cabinets; also conduit fittings, breaker boxes and "Safe-T-Cirkits" for grounded neutral installations. Columbia Metal Box Co., 260 East 143rd St., New York City.

J-109 **Pressure and Vacuum Gages.** Bulletin, 8¼" × 10⅝", 12 pages, covers line of pressure types industrial heavy duty, standard pressure, altitude, compound-pressure and vacuum, retard-vacuum and refrigeration gages, combination thermometer-pressure and altitude gage and water pressure test gage. Certified Gauge & Instrument Corp., 34-18 Northern Blvd., Long Island City, N. Y.

J-110 **Voltage Stabilizers.** Bulletin DL48-71L, 8½" × 11", 4 pages and price sheet DL48-444, describe and illustrate stabilizers with varying input voltage 95-130 volts and constant output voltage 115 volts ±½%, covers cased and uncased models and includes dimension tables. Raytheon Mfg. Co., 190 Willow St., Waltham, Mass.

J-111 **Small Spectrometer.** Bulletin 144-04, 8½" × 11", 4 pages, describes and illustrates small spectrometer for use in research laboratories when the highest precision is not required, shows polarizing attachment and spectrometer accessories. The Gaertner Scientific Corp., 1201 Wrightwood Ave., Chicago, Ill.

J-112 **Gas Appliances.** Catalog No. 41, 8½" × 11", 20 pages, covers line of appliances including burners, torches, pot-hardening and melting furnaces, heat-treating furnaces, blowers, valves, soldering furnaces, conversion burner, soldering fluid and automatic air-gas proportioner. Johnson Gas Appliance Co., Cedar Rapids, Iowa.

J-113 **Liquid Level Tank Gage.** Form No. 176, 8½" × 11", 2 pages, describes and illustrates non-mechanical distant reading liquid level tank gage which indicates level in inches and quarter inches in any shape of tank at a remote location. Petrometer Corp., 1 Star Square, Long Island City, N. Y.

J-114 **Precision Voltmeter Multipliers.** Bulletin IV-B, 8¼" × 10¾", 2 pages, describes and illustrates Types MFA and MFB sealed resistors for use under severe humidity conditions, such as are encountered in marine service, may be used with one milliampere d.c. instruments and other instruments. International Resistance Co., 401 North Broad St., Philadelphia, Pa.

J-115 **Photoelectric Control Apparatus.** Bulletin, 8½" × 10½", 2 pages, describes and illustrates smoke alarm and combustion control unit Model 133; for ues as indicator and alarm units Model 133 and 134 and the meter unit Model 135 are installed. Oil burner controls are also covered. Electronic Products Co., St. Charles, Illinois.

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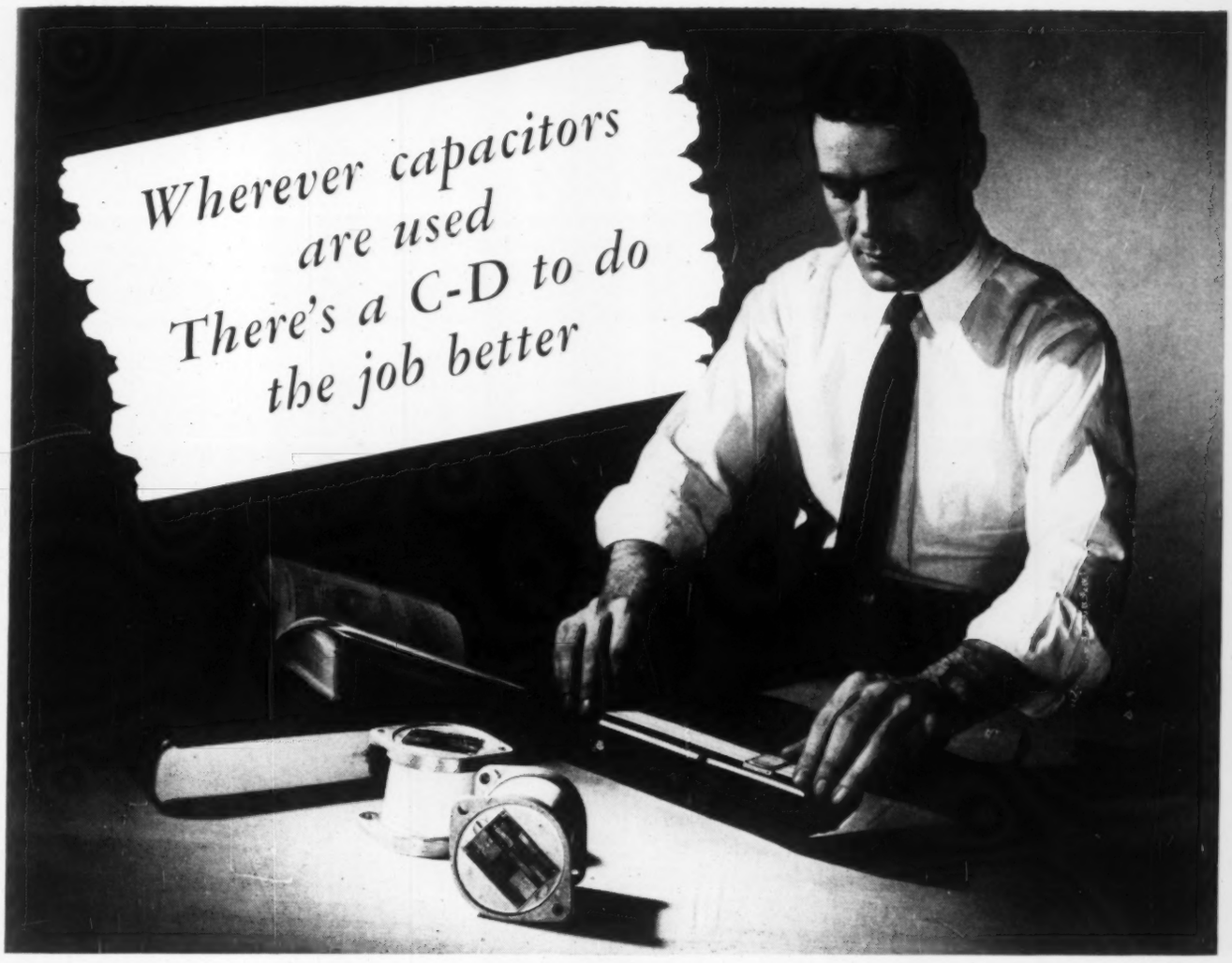

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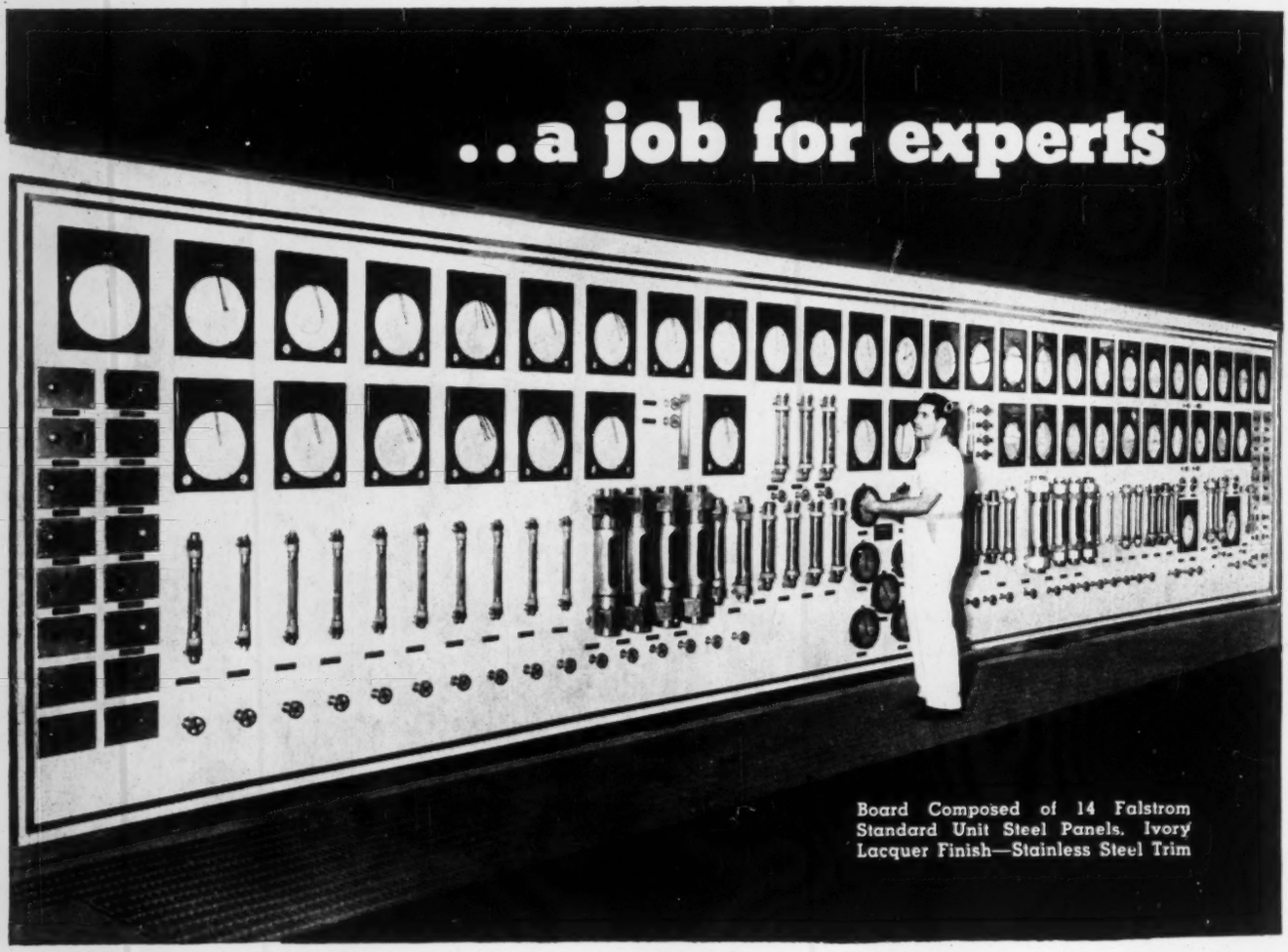

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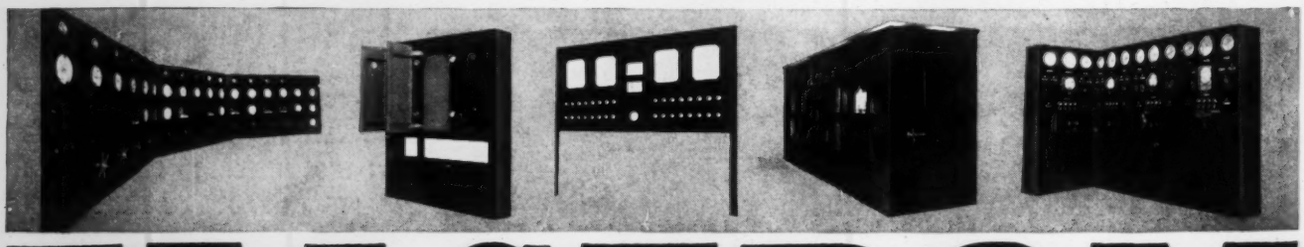

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